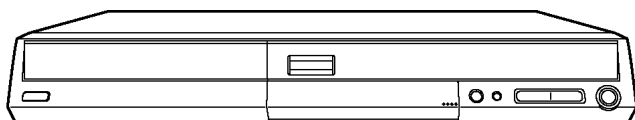# Service Manual

DVD Video Recorder

Notes: This model's DVD Drive is VXY1872.

When replacing with Digital P.C.B. or HDD, "UNFORMAT" indication is displayed and HDD must be formatted.
After that, <u>programme in the HDD will be lost</u>.
In detail, please refer to each content in this service manual.

DMR-EH60EE
DMR-EH60GC
DMR-EH60GCS
DMR-EH60GN

Vol.1

Colour
(S).....................Silver Type

Panasonic

Introduction

This service manual contains technical information which will allow service personnel's to understand and service this model.
Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filed with original service manual.

1) This service manual does not contain the following information, because of the impossibility of sevicing at component level.

   * Schematic Diagram, Block Diagram and P.C.B. layout of Digital P.C.B.
   * Parts List for individual parts of Digital P.C.B.
   * Exploded View and Parts List for individual parts of RAM drive.

2) The following category are recycle module part. Please send them to Central Repair Center.

   * Digital P.C.B.
     (EH60EE: RFKBEH60EE, EH60GC: RFKBEH60GC, EH60GCS: RFKBEH60GCS, EH60GN: RFKBEH60GN)
   * RAM drive (VXY1872)

Specifications

Power supply	EH60EE,GN	AC220-240 V, 50 Hz
	EH60GC,GCS	AC220-240 V, 50 Hz / 60 Hz

Power consumption	35 W

Recording system	DVD video recording format (DVD-RAM), DVD video format (DVD-R), DVD video format (DVD-RW)

Optical pick-up	System with 1 lens, 2 integration units (662 nm wavelength for DVDs, 795 nm wavelength for CDs)

Recordable discs	DVD-RAM
	• Ver.2.0 Ver.2.1/3x-SPEED DVD-RAM Revision 1.0 • Ver.2.2/5X-SPEED DVD-RAM Revision 2.0
	DVD-R
	• for General Ver.2.0 • for General Ver.2.0/4X-SPEED DVD-R Revision 1.0 • for General Ver.2.x/8X-SPEED DVD-R Revision 3.0
	DVD-RW
	• Ver.1.1 • Ver.1.1/2X-SPEED DVD-RW Revision 1.0 • Ver.1.2/4X-SPEED DVD-RW Revision. 2.0
	+R
	• Ver.1.0,Ver.1.1,Ver.1.2

Internal HDD capacity	200GB

Quick Start for Recording (Quick Start: ON)	1 Sec. Quick Start for Recording on DVD-RAM and HDD* *From the power off state, for recording on DVD-RAM and HDD* starts about 1 second after first pressing the power botton and then sequentially pressing the REC button (Quick Start Mode).

Recording time (Approx.)	Max. 8 hours (using 4.7 GB disc) XP : 60 minutes SP : 120 minutes LP : 240 minutes EP : 360 minutes or 480 minutes Max. 355 hours with HDD (EP 8H mode)

Region number	EH60EE	Region No.5
	EH60GC	Region No.2
	EH60GCS	Region No.3
	EH60GN	Region No.4

Discs played *NOTE: EH60EE Only	DVD-RAM
	DVD-R
	DVD-RW
	DVD+R
	DVD+RW
	DVD-Video, DVD-Audio, Video CD, CD-Audio (CD-DA) *SVCD (Conforming to IEC62107) This unit is not compatible with "Chaoji VCD" available on the market including CVD, DVCD and SVCD that do not conform to IEC62107.
	CD-R/RW (MP3, CD-DA, Video CD, *SVCD, JPEG formatted discs)

Compression Method	MP3
	Format : ISO9660 level1 or 2 (except for extended formats), Joliet Compatible compression rate : 32kbps ~ 320kbps Compatible sampling rate : 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, 48kHz This unit not compatible with ID3 tags.
	CD (JPEG)
	Format : ISO9660 level1 or 2 (except for extended formats), Joliet Compatible pixels : between 34 × 34 and 6144 × 4096 pixels Sub Sampling 4:2:2 or 4:2:0 This unit not compatible with MOTION JPEG.
	MP3, CD (JPEG) Common Items
	Maximum number of folders : 99 (one disc) Maximum number of files : 999 (one disc) This unit is compatible with multi-session. This unit is not compatible with packet writing.

Video system	

TV system	PAL: 625 lines, 50 fields SECAM: 625 lines, 50 fields (input only) NTSC: 525 lines, 60 fields

Recording system	MPEG2 (Hybrid VBR)

Video Input *NOTE: EH60EE/ GCS/GC Only	Video In: (*SECAM/PAL /NTSC)	AV1/AV2(21pin x 2), AV3/AV4(pin jack x 2) 1.0Vp-p ; 75Ω
	S-Video In: (*SECAM/PAL /NTSC)	AV2(21pin), AV3/AV4(S connector x 2) Y:1.0Vp-p ; 75Ω, C:0.3Vp-p ; 75Ω
	RGB In(PAL):	AV2(21pin) 0.7Vp-p ; 75Ω

Video Output	Video Out: (PAL/NTSC)	AV1/AV2(21pin × 2), LINE(pin jack × 1) 1.0Vp-p ; 75Ω
	S-Video Out: (PAL/NTSC)	AV1(21pin), S connector × 1 Y: 1.0Vp-p ; 75Ω, C: 0.3Vp-p ; 75Ω
	RGB Out: (PAL/NTSC)	AV1(21pin), 0.7Vp-p ; 75Ω
	Component video out: (NTSC 480P/480I) (PAL 576P/576I)	Y: 1.0Vp-p ; 75Ω (pin jack) PB: 0.7Vp-p ; 75Ω (pin jack) PR: 0.7Vp-p ; 75Ω (pin jack)

Antenna reception system	EH60EE		
	OIRT (PAL-DK), (SECAM-DKK1)	VHF: CH R1-CH R12 UHF: CH 21-CH 69 CATV: CH 44MHz - 470MHz	
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2-CH E12 UHF: CH E21-CH E69 CATV: CH S01-S05, M1-M10, U1-U10, S21-S41	
	Hong Kong (PAL-I)	UHF: CH 21-CH 69	
	EH60GC		
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2-CH E12 UHF: CH E21-CH E69 CATV: CH S01-S05, M1-M10, U1-U10, S21-S41	
	EH60GCS		
	CCIR (PAL-BGH) (SECAM-BG)	VHF: CH E2-CH E12 UHF: CH E21-CH E69 CATV: CH S01-S05, M1-M10, U1-U10, S21-S41	
	OIRT (PAL-DK), (SECAM-DKK1)	VHF: CH R1-CH R12 UHF: CH 21-CH 69 CATV: CH 44MHz-470MHz	
	Hong Kong (PAL-I)	UHF: CH 21-CH 69	
	China (PAL-D)	VHF: CH 1-CH 12 UHF: CH 13-CH 57 CATV: CH Z1-Z35	
	EH60GN		
	Australia (PAL-B)	VHF: CH 0-CH 12 UHF: CH 28-CH 69 CATV: CH 45MHz-470MHz	
	New Zealand (PAL-BG)	VHF: CH 1-CH 11 UHF: CH 21-CH 69 CATV: CH 44MHz-470MHz	

RF Converter Output	Not provided
DV Input (PAL/NTSC)	IEEE 1394 Standard, 4pin

SD card slot	
Still Picture (JPEG, TIFF)	SD memory card slot: 1pc
Compatible Media	SD memory card */Multi Media Card *Includes miniSDTM cards. (A miniSDTM card adapter needs to be inserted.)
Format	FAT12, FAT16
Image file format	• JPEG conforming to DCF (Design rule for Camera File system) (sub sampling; 4:2:2 or 4:2:0) • TIFF (Uncompressed RGB chunky) • DPOF Compatible
Number of pixels	34 × 34 to 6144 × 4096
Thawing time	Approx. 7sec (2M pixels)

Audio system	
Recording system	Dolby Digital 2ch, Linear PCM (XP mode, 2ch)
Analog Input	AV1/AV2(21pin × 2), AV3/AV4(pin jack × 2) Standard input: 0.5 Vrms Full scale: 2.0 Vrms at 1KHz Input impedance: More than 10KΩ
Analog Output	AV1/AV2(21pin × 2), LINE(pin jack × 1) Standard output: 0.5 Vrms Full scale: 2.0 Vrms at 1KHz Output impedance: Less than 1.0KΩ
Number of channels	Recording: 2 channels Playback: 2 channels
Digital Output	Digital Audio Optical Output Connector (PCM,Dolby Digital,DTS,MPEG)
Dimensions	Approx. 430 (W) × 63 (H) × 350.5 (D) mm (excluding protrusions)
Mass	Approx. 4.5 kg
Operating temperature	5˚C - 40˚C
Operating humidity range	10 %-80 % RH (no condensation)
Clock unit	Quartz-controlled 12-hour digital display
LASER Specification (Class I LASER Product)	
Wave length	795 nm(CDs), 662 nm(DVDs)
Laser power	No hazardous radiation is emitted with the safety protection.
Power consumption in standby mode	approx. 3.0 W
Solder	These models use lead free solder (PbF)

Notes : Mass and dimensions are approximate.
Specifications are subject to change without notice.

⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

1 Safety precautions

1.1. General guidelines

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.

3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. Leakage current cold check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.

2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1MΩ and 5.2MΩ.

    When the exposed metal does not have a return path to the chassis, the reading must be ∞ .
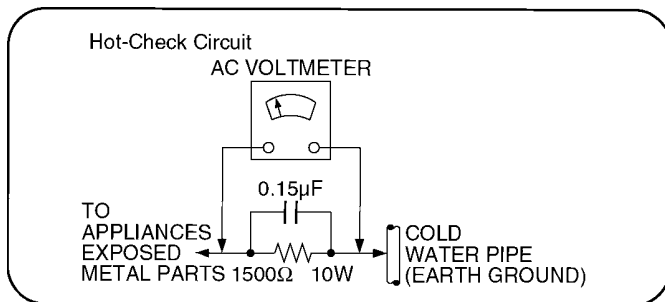
Figure 1

1.1.2. Leakage current hot check (See Figure 1 .)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.

2. Connect a 1.5kΩ, 10 watts resistor, in parallel with a 0.15μF capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.

3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.

4. Check each exposed metallic part, and measure the voltage at each point.

5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.

6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliampere. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

2 Prevention of Electrostatic Discharge (ESD) to Electrostatic Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatic Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistor-sand semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise hamless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

■ IMPORTANT SAFETY NOTICE ■

There are special components used in this equipment which are imporant for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

---

3 Precaution of Laser Diode

CAUTION:

This product utilizes a laser diode with the unit turned "on",
invisible laser radiation is emitted from the pickup lens.
Wave length: 662 nm (DVDs) /795 nm (CDs)
Maximum output radiation power from pickup: 100 µ
W/VDE
Laser radiation from the pickup lens is safety level,but be
sure the followings:
1. Do not disassemble the optical pickup unit, since
   radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It
   was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

ACHTUNG:

Dieses Produkt enthält eine Laserdiode.
Im eingeschalteten Zustand wird unsichtbare
Laserstrahlung von der Laserinheit abgestrahlt.
Wellenlänge: 662 nm (DVD) /795 nm (CD).
Maximale Strahlungsleistung der Lasereinheit: 100 µ
W/VDE
Die Strahlung der Lasereinheit ist ungefährlich, wenn
folgende Punkte beachtet werden:
1. Die Lasereinheit nicht zerlegen, da die Strahlung an
   der freigelegten Laserdiode gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit
   nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlinse
   blicken.
4. Nicht über längere Zeit in die Fokussierlinse blicken.

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

CLASS 1
LASER PRODUCT

DANGER	– VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. (FDA 21 CFR)
CAUTION	– VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM. (IEC60825-1)
ATTENTION	– RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
ADVARSEL	– SYNLIG OG USYNLIG LASERSTRÅLING VED ÄBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO!	– AVATTAESSA OLET ALTTIINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
VARNING	– SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRAKTA EJ STRÅLEN.
ADVARSEL	– SYNLIG OG USYNLIG LASERSTRÅLING NÄR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VORSICHT	– SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
注意	– 打开时有可见及不可见激光辐射。避免激光束照射。
注意	– ここを開くと可視及び不可視のレーザー光が出ます。 ビームを直接見たり、触れたりしないでください。 RQLS0233
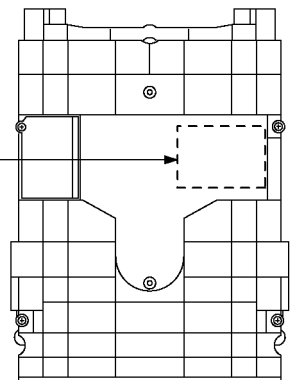
CAUTION!
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN
THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

4 Handling the Lead-free Solder

4.1. About lead free solder (PbF)

Distinction of PbF P.C.B.:

P.C.B.s (manufactured) using lead free solder will have a PbF stamp on the P.C.B.

Caution:

· Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher.
Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ±
20°F (370 ± 10°C).

· Pb free solder will tend to splash when heated too high (about 1100°F/600°C).

· When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat
the soldering points with the Pb free solder until it melts enough.

5 Each Button

Remote control (Example: DMR-EH60GN) Please refer to Operating Instructions for details.

Instructions for operations are generally described using the remote control.
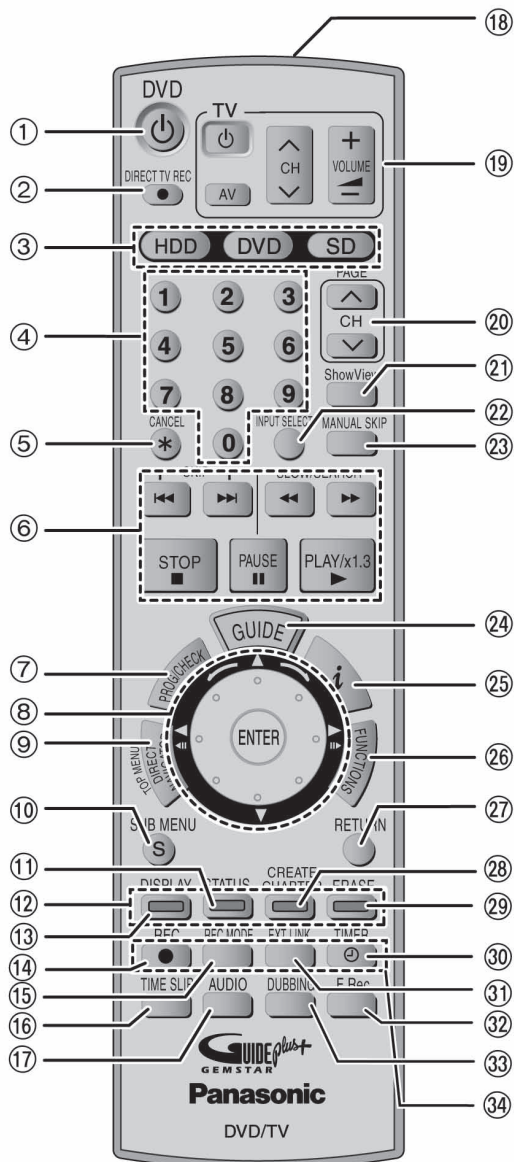
① Turn the unit on
② Direct TV recording
③ Select drive (HDD, DVD or SD)
④ Select channels and title numbers, etc./Enter numbers
⑤ Cancel
⑥ Basic operations for recording and play
⑦ Show timer recording programme screen
⑧ Smart Wheel (➡ below)
⑨ Show Top menu/Direct Navigator
⑩ Show sub menu
⑪ Show status messages
⑫ Colour buttons for switching between Video/Picture and Video/Playlists, selecting character type when entering text, manual tuning settings and GUIDE Plus+ operations※
⑬ Show on-screen menu
⑭ Start recording
⑮ Change recording mode
⑯ Skip the specified time/Display the television image as a picture-in-picture
⑰ Select audio
⑱ Transmission window
⑲ Television operations
⑳ Channel select/Change pages in the GUIDE Plus+ system※
㉑ Show SHOWVIEW screen
㉒ Input select (AV1, AV2, AV3, AV4 or DV)
㉓ Skip 30 seconds forward
㉔ Show the GUIDE Plus+ screen
㉕ Show programme information in the GUIDE Plus+ system※
㉖ Show FUNCTIONS window
㉗ Return to previous screen
㉘ Create chapter
㉙ Erase items
㉚ Timer recording standby/release
㉛ Linked timer recordings with external equipment
㉜ Flexible Recording
㉝ One touch transfer (dubbing)
㉞ Recording functions
※Refer to the "User's manual for the GUIDE Plus+ system" for more information.

Note
● Buttons such as the [● REC] button do not protrude as much as other buttons to stop them from being pressed accidentally.
● If you press [EXT LINK] accidentally, the unit turns off and switches to recording standby mode. Press [EXT LINK] again to cancel recording standby.
● The word "button" is not used in these operating instructions so "Press the [ENTER] button." is shown as "Press [ENTER]."
● You can use this remote control to operate your television if you set the television manufacturer code.

■ Smart Wheel operation
● **Select items on menu screens and set items.**
  Press [▲, ▼, ◀, ▶] (up, down, left or right) to select an item.

  You can also turn the wheel to select an item.
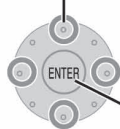
  Press [ENTER] to confirm.

These operations are also possible…..
● **Frame-by-frame (backward/forward/):**
  While paused, press [◀II] or [II▶] (left/right)
● **Search (forward/backward):**
  During play, turn right or turn left
● **Slow-motion (forward/:backward):**
  While paused, turn right or turn left

Note
Press the Smart Wheel lightly when turning it.
If you press it strongly when turning it, [▲, ▼, ◀, ▶] may be mistakenly activated.

Main unit

Opening the front panel

Press down on the
∘∘∘∘ part with your finger
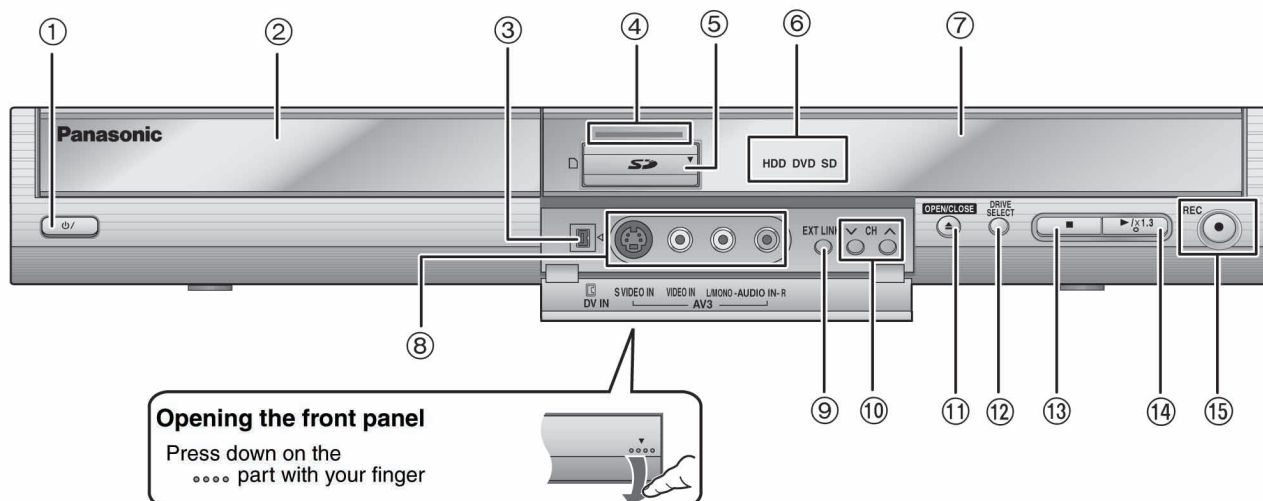
① **Standby/on switch (少/I)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
② Disc tray
③ Connection for digital video (DV) camcorder
④ Lights when "FL Display" is set to "Bright"
⑤ SD card slot
⑥ Lights when the HDD, DVD or SD drive is selected
⑦ Display (➡ below)
⑧ Connection for camcorder etc.
⑨ Linked timer recordings with external equipment (for EE only)

⑩ Channel select
⑪ Open/close disc tray
⑫ Select drive
Drive changes each time you press [DRIVE SELECT].
⑬ Stop
⑭ Start play
⑮ Start recording/Remote control signal sensor
Specify a time to stop recording

Rear panel terminals

The unit's display

① e.g., **HDD**

Recording   Playback   Recording/Playback
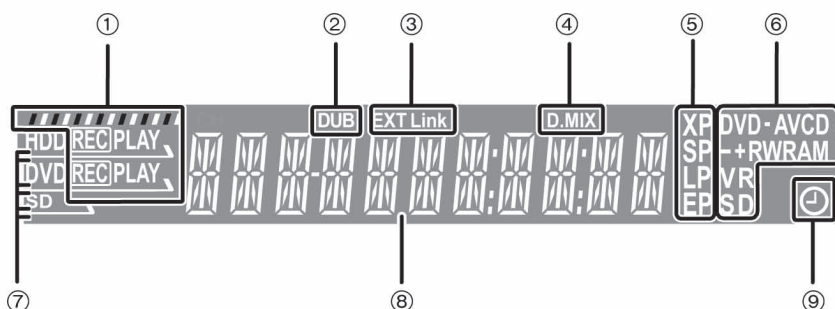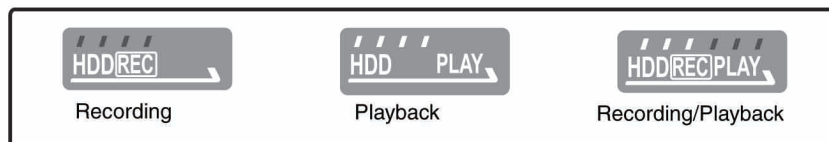
② Transferring (dubbing) indicator
③ Linked timer recordings with external equipment indicator (for EE only)
④ D.MIX (multi-channel DVD-Audio only)
When lit: Down-mixing is possible.
When off: The disc prevents down-mixing so only the two front channels can be played (Regarding DVD-Audio)
⑤ Recording mode
⑥ Disc type
⑦ Lights when the HDD, DVD or SD drive is selected
⑧ Main display section
⑨ Timer recording indicator

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6   New Feature

6.1.   Quick start function(REC)

1. General

A few seconds after tuning on the unit,you can start recording to DVD-RAM,HDD.

You can switch the operation of this function (ON/OFF) on the menu screen. .

2. Quick start(REC) principle

In the power-off at Quick start, only power supplies for video IC,tuner and storage media are cut off.

①When the REC button is pushed a few second after the power button is pushed, Audio and Video data are stored in DDR SDRAM before a storage media(DVD-RAM or HDD) preparation.

*Preparation time → DVD-RAM: Fabout 8seconds

HDD: about 18seconds

②After a storage media(DVD-RAM or HDD) preparation,Audio and Video data are transfer from DDR SDRAM to the storage media.
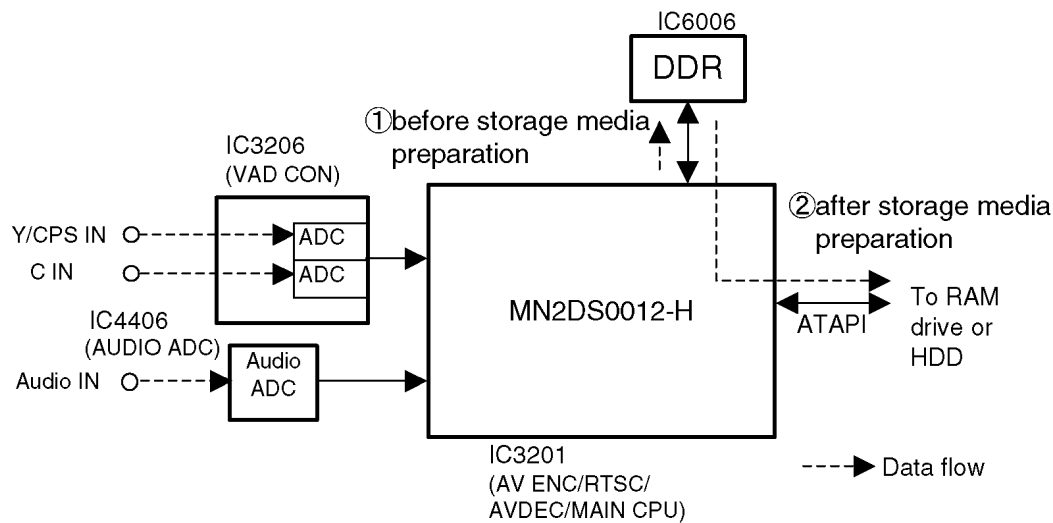
Quick start(REC) explanation chart
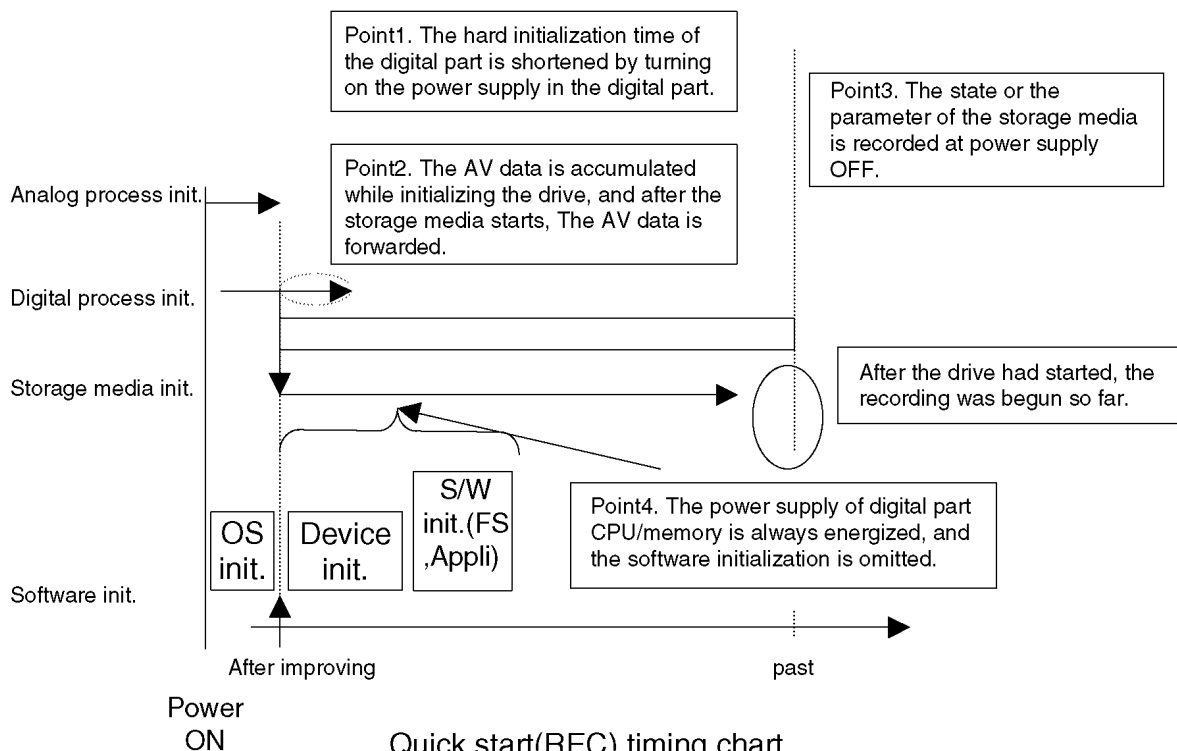
Quick start(REC) timing chart

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7 Taking out the Disc from RAM-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

7.1. Forcible Disc Eject

7.1.1. When the power can be turned off.

1. Turn off the power and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

7.1.2. When the power can not be turned off.

1. Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly, and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

7.2. When the Forcible Disc Eject can not be done.

1. Turn off the power and pull out AC cord.
2. Remove the Top Case.
3. Remove the Front Panel.
4. Remove 4 screws and Upper Base Unit from DVD-RAM Drive.
5. Take out the disc and put the Opener Roller on fully position for direction of Arrow.
6. Put the Upper Base Unit so that the Opener Roller is inserted into the groove.
7. Check Opener Roller is seen through the Opener position Checking Hole, and tighten 4 screws.

Upper Base Unit

Expanded View

Opener Position
Checking Hole

4 screws

Opener Roller

Upper Base Unit   Remove the Disc
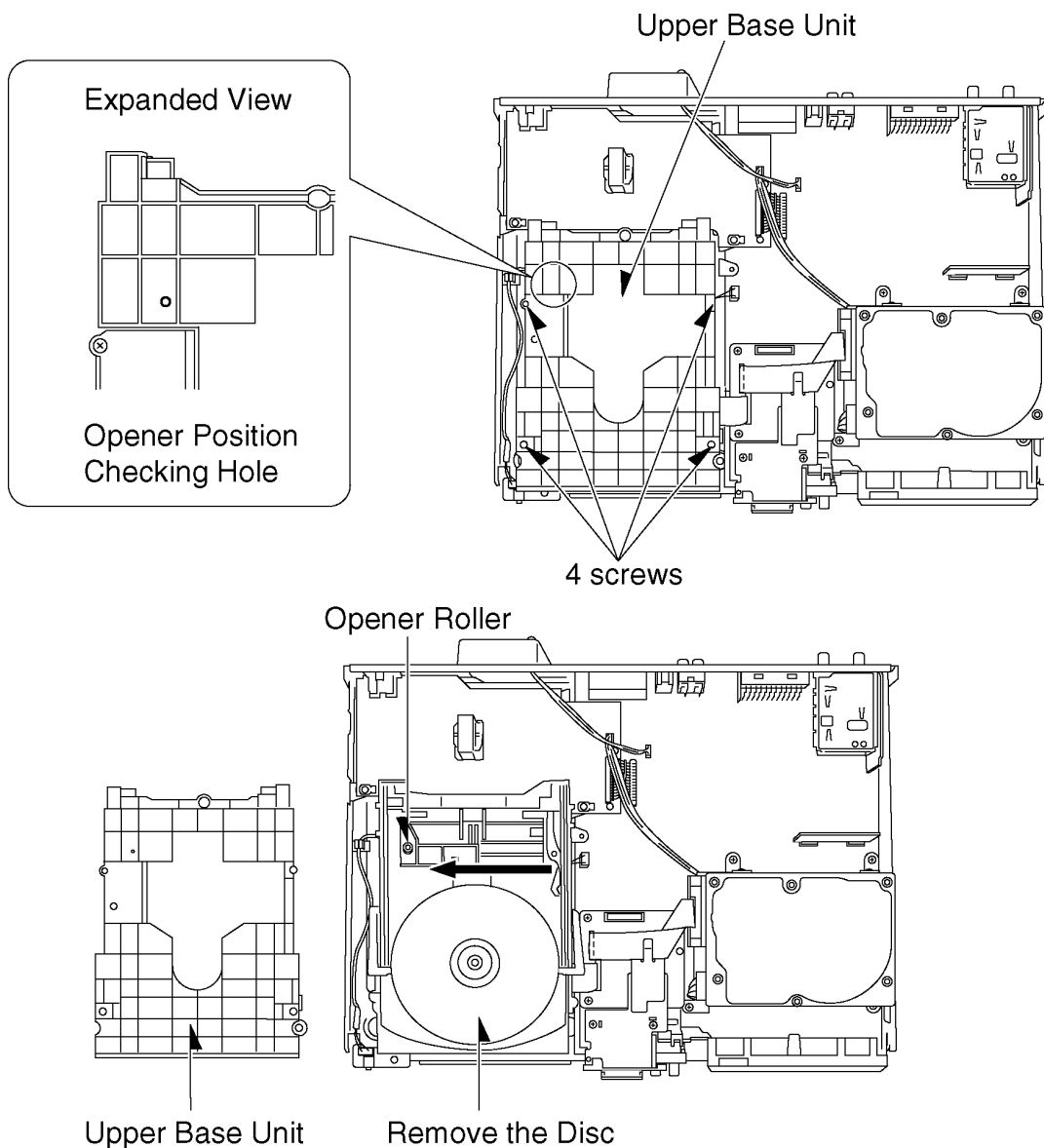
8 Service Explorer

Confirm "RAM-Drive Last Error" in Service Mode

Execute Service Mode

1. Press [REC], [CH UP] and [OPEN/CLOSE] simultaneously for 5 seconds when P-off.

   FL Display:

   ┌─────────────────────┐
   │   │
   │   SERVICE MODE   │
   │   │
   └─────────────────────┘

   *After finishing display "(7). Factor of Drive Error occurring", press [0] [2] ~[1] [9] keys of the Remote Controller so that 19 memories can be displayed as maximum.

2. Press [4] [2] keys of remote controller.

   Example of FL Display:

   (1) Error Number is displayed for 5 seconds.

   ┌─────────────────────┐
   │   │
   │   NO   01   │
   │   │
   └─────────────────────┘

   (2) Time when the error has occurred is displayed for 5 seconds.

   ┌─────────────────────┐
   │   │
   │   50216191526   │
   │   │
   └─────────────────────┘

   The error has occurred at 2005(year)/Feb.(month)/16(day)/19(hour):15(minute):26(second)

   (3) Last Drive Error (1/2) is displayed for 5 seconds.

   ┌─────────────────────┐
   │   │
   │   03 1000   │
   │   ──   │
   └─────────────────────┘
          │
          │
          ▼
   Error Sense key ───► { 00: Bad disc
                              03: Bad disc
                              04: Bad disc or RAM-Drive malfunction

   ┌───┐
   │ **When above error codes are displayed, confirm operation with Panasonic RAM disc or** │
   │ **Panasonic DVD-R disc.** │
   │ ***If the operation is OK, judge the error is due to media.** │
   │ ***If the operation is NG and symptom as BLOCK NOISES and so on that are particular** │
   │ **symptom of Digital appears, judge the error is due to RAM-Drive or Digital PCB.** │
   └───┘

   (4) Last Drive Error (2/2) is displayed for 5 seconds.

   ┌─────────────────────┐
   │   │
   │   00 13 00 00   │
   │   │
   └─────────────────────┘

   *This error code is unnecessary for service.

(5) Error occurring Disc type is displayed for 5 seconds.

```
┌─────────────────────────┐
│                         │
│     MEDIADVDR           │
│           ─────         │
│              │          │
└──────────────┼──────────┘
               │
               └──────────────▶  Disc type
                          *The error disc cannot be specified, display as "DVD".
```

(6) Disc Maker´s ID is displayed for 5 seconds.

```
┌─────────────────────────┐
│                         │
│     MXL  R  061         │
│                         │
└─────────────────────────┘
```

Example of Disc Maker´s ID:

DVD-R Disc

No.	FL Display (Disc Maker´s ID)	Disc Maker	Country
1	MEI	Panasonic	Japan
2	PVC	Pioneer	Japan
3	MCC	Mitsubishi Chemical Corporation	Japan
4	TDK	TDK	Japan
5	MXL	Maxell	Japan
6	MCI	MITUI CHEMICALS	Japan
7	JVC	Victor JVC	Japan
8	TAIYOYUDEN TYG	Taiyo yuden	Japan
9	GSC	Giga Storage	Taiwan
10	PRODISC	Prodisc	Taiwan
11	PRINCO	PRINCO	Taiwan
12	RITEK	RITEK	Taiwan
13	OPTDISC	OPTDISC	Taiwan
14	LEAD DATA	LEAD DATA	Taiwan
15	CMC	CMC	Taiwan
16	AUVISTAR	AUVISTAR	Taiwan
17	ACER	Acer	Taiwan
18	VIVASTAR	VIVASTAR	Switzerland
19	LGE	LG Electronics	Korea

DVD-RAM Disc

No.	FL Display (Disc Maker´s ID)	Disc Maker	Country
1	MEI	Panasonic	
2	MATSUSHITA	Panasonic	Japan
3	MXL	Maxell	Japan
4	PRODISC	Prodisc	Taiwan
5	OPTDISC	OPTDISC	Taiwan
6	CMC	CMC	Taiwan

*Since an display is arbitrarily set up by the disk producer side, the above-mentioned display may be changed. Please make it reference as an example of a display.

(7) Factor of Drive Error occurring is left displayed

```
┌─────────────────────────┐
│                         │
│   INFO  A804  40        │
│         ────   ──       │
│           │     │       │
└───────────┼─────┼───────┘
            │     │
            │     └──────▶  Error occurring disc state
            │
            └────────────▶  Error occurring disc type
```

Error Occurring Disc Type

FL Display	Disc Type
00	DVD-ROM/Video
01	Audio-CD
02	2.6GB DVD-RAM
03	4.7GB DVD-RAM
04	DVD-R

Error Occurring Disc State

FL Displays (Hexadecimal)	Description			
	Disc distinction state	Cartridge disc state	Cartridge disc state	Disc size
00	OK	With cartridge	Has not been opened yet.	12 cm
10	OK	With cartridge	Has not been opened yet.	8 cm
20	OK	With cartridge	Has been opened.	12 cm
30	OK	With cartridge	Has been opened.	8 cm
40	OK	Bare	Has not been opened yet.	12 cm
50	OK	Bare	Has not been opened yet.	8 cm
60	OK	Bare	Has been opened.	12 cm
70	OK	Bare	Has been opened.	8 cm
80	NG	With cartridge	Has not been opened yet.	12 cm
90	NG	With cartridge	Has not been opened yet.	8 cm
A0	NG	With cartridge	Has been opened.	12 cm
B0	NG	With cartridge	Has been opened.	8 cm
C0	NG	Bare	Has not been opened yet.	12 cm
D0	NG	Bare	Has not been opened yet.	8 cm
E0	NG	Bare	Has been opened.	12 cm
F0	NG	Bare	Has been opened.	8 cm

9 Self-Diagnosis and Special Mode Setting

9.1. Self-Diagnosis Functions

Self-Diagnosis Function provides information for errors to service personnel by "Self-Diagnosis Display" when any error has occurred.

U**, H** and F** are stored in memory and held.

You can check latest error code by transmitting [0] [1] of Remote Controller in Service Mode.

Automatic Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	REMOTE DVD＊ "＊" is remote controller code of the main unit. Display for 5 seconds.
U59	Abnormal inner temperature detected	Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.	No display	U59 "U59 is displayed for 30 minutes.
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	U99 Displayed is left until the [POWER] key is pressed.
H19	Inoperative fan motor	When inoperative fan motor is detected after powered on, the power is turned off automatically. The event is saved in memory.	No display	No display
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F58	Drive hardware error	When drive unit error is detected, the event is saved in memory.	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	When initialization error is detected after starting up main microprocessor for program recording, the power is turned off automatically. The event is saved in memory.	No display	No display
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	**"This disc is incompatible."**	UNSUPPORT Display for 5 seconds.
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	**"Cannot read. Please check the disc."**	NOREAD Display for 5 seconds.
HARD ERR	Drive error	The drive detected a hard error.	**"DVD drive** error."	HARD ERR Display for 5 seconds.
SELF CHECK	Restoration operation	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive.	No display	SELF CHECK
Full Program	32 programs are already set.	32 programs are already set.	No display	PROG FULL

Error Code	Diagnosis contents	Description	Monitor Display	Automatic FL display
UNFORMAT	Unformatted disc error	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment. If you will use this disc, format is necessary. But, all program recorded on this disc will be deleted.	Format This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	UNFORMAT
PLEASE WAIT	Unit is in termination process	Unit is in termination process now. "BYE" is displayed and power will be turned off. In case "Quick Start" of setup menu is ON, it is displayed in restoration operation for AC off.	No display	PLEASE WAIT

9.2. Special Modes Setting

Item		FL display	Key operation
Mode name	Description		Front Key
TEST Mode	*All the main unit´s parameters (include tuner) are initialized.	TEST AV1	Press [STOP], [CH UP] and [OPEN/CLOSE] keys simultaneously for 5 seconds when power is off.
Rating password	The audiovisual level setting password is initialized to "Level 8".	INIT	Open the tray, and press [REC] and [PLAY] simultaneously for 5 seconds. **NOTE:** Drive should be selected to DVD.
Service Mode	Setting every kind of modes for servicing. *Details are described in "**9.3. Service Mode**".	SERVICE MODE	When the power is off, press [CH UP], [OPEN/CLOSE] and [REC] keys simultaneously for 5 seconds.
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. *When Timer REC is ON or EXT-LINK (for EH60EE) is ON, execute " Forced disc eject " after releasing Timer REC or EXT-LINK (for EH60EE). *This command is not effective during "Child lock" is ON. While Demonstration Lock is being set, this Forced disc eject function is not accepted. If this command was executed while TIMER REC is being set, TIMER REC setting will be kept.	The display before execution leaves. ✱✱✱✱✱✱✱✱✱✱✱✱	When the power is off, press [STOP] and [CH UP] keys simultaneously for 5 seconds.
Child lock/unlock	Set or release "Child Lock".	X HOLD	Press [ENTER] and [RETURN] by remote controller simultaneously until [X-HOLD] is displayed.
NTSC/PAL system select	To switch PAL/NTSC alternately.	The display before execution leaves. ✱✱✱✱✱✱✱✱✱✱✱✱	While the power is on (E-E mode), press [STOP] and [OPEN/CLOSE] simultaneously for 5 seconds.
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly. *When Timer REC is ON or EXT-LINK (for EH60EE) is ON, execute "Forced Power-off" after releasing Timer REC or EXT-LINK (for EH60EE).	Display in P-off mode.	Press [Power] key over than 10 seconds.
Aging	Perform sequence of modes as * Aging Description shown below continually. **Caution:** **All programs in HDD and DVD-RAM disc will be deleted because Formatting is done once in Aging process.**	Display following the then mode.	When the power is ON, press [STOP], [POWER] and [OPEN/CLOSE] simultaneously for over 5 seconds and less than 10 seconds. **NOTE1:** If Unit has not turned into Aging mode by operations shown above, execute TEST MODE once and re-execute operation shown above. (*All the main unit's parameters include tuner are initialized by TEST mode.) **NOTE2:** If the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and re-execute this command. *When releasing Aging mode, press [POWER] key.

Item		FL display	Key operation
Mode name	Description		Front Key

Aging Contents (Example):

At start, and in the case that the
memory remainder of HDD are 0

```
┌──────────────┐                    ┌──────────────┐
│ Format (DVD) │- - - - - - - - - ▶│ Format (HDD) │
└──────────────┘                    └──────────────┘
```

If the memory   At start, and in the case that the
remainder of   memory remainder of HDD are 0
DVD only are 0

```
┌──────────────────┐    ┌──────────────┐    ┌──────────────────┐
│ REC & PLAY (HDD) │ ─▶ │ REC & PLAY   │ ─▶ │ REC  (HDD)   &   │
│                  │    │ (DVD)        │    │ PLAY  (DVD)  *1  │
└──────────────────┘    └──────────────┘    └──────────────────┘
```

```
        ┌─────────────────────────────┐    ┌──────────────────┐
        │ REC & PLAY (HDD)            │ ◀─ │ REC  (DVD)   &   │
        │ →REC (HDD) & PLAY (DVD) *3  │    │ PLAY  (HDD)  *2  │
        └─────────────────────────────┘    └──────────────────┘
```

If the memory remainder
of DVD,HDD are 0

*1 : REC (HDD) & PLAY (DVD) content of operation
HDD→REC, DVD→PLAY, CUE, REV, PLAY, PAUSE, SLOW, R-SLOW, PLAY, PROGRAM NAVI
*2 : REC (DVD) & PLAY (HDD) content of operation
DVD→REC, HDD→PLAY, CUE, REV, PLAY, PAUSE, SLOW, R-SLOW, PLAY, PROGRAM NAVI, TRAY OPEN/CLOSE
*3 : REC & PLAY (HDD)→REC (HDD) & PLAY (DVD) content of operation
HDD→REC & PLAY, DVD→PLAY, TRAY OPEN/CLOSE

Mode name	Description	FL display	Front Key
Demonstration lock/unlock	Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by "Main unit initialization" of service mode.	*When lock the tray. LOCK "LOCK" is displayed for 3 seconds.	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds.
		*When unlock the tray. UNLOCK "UNLOCK" is displayed for 3 seconds.	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds.
		*When press OPEN/CLOSE key while the tray being locked. LOCK Display "LOCK" for 3 seconds.	Press [OPEN/CLOSE] key while the tray being locked.
ATP re-execution	Re-execute ATP.	Display at ATP executing. ＊＊＊＊＊＊＊＊＊＊	When the power is on (E-E mode), press [CH UP] and [CH DOWN] simultaneously for 5 seconds.
Progressive initialization	The progressive setting is initialized to Interlace.	The display before execution leaves. ＊＊＊＊＊＊＊＊＊＊	When the power is on (E-E mode), press [STOP] and [PLAY] simultaneously for 5 seconds.

9.3. Service Modes

Service mode setting: While the power is off, press **REC, CH UP and OPEN / CLOSE** simultaneously for five seconds.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.	SERVICE MODE	Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U/H/F held by Timer is displayed on FL. *Details are described in **"9.1. Self-Diagnosis Functions"**.	♣ □□ *♣ shows U/H/F. □□ shows number.	Press [0] [1] in service mode
ROM Version Display	Region code, MAIN firm version, TIMER firm version and DRIVE firmware versions are displayed on FL for five seconds per each version in order, but ROM version will be left displayed.	REGION* MAIN ＊＊＊＊＊ TIMER＊＊＊＊＊＊ DRIVE ＊＊＊＊ ROM ＊ ＊＊＊ '"*" are version displays.	Press [0] [2] in service mode
White Picture Output	White picture is output as component Output from AV Decoder. *White picture (Saturation rate : 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". WHIT I Switch Interlace/Progressive WHIT P	Press [1] [1] in service mode. Press [1] [4] in White Picture Output mode. *I/P are switched alternately.
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". MAGE I Switch Interlace/Progressive MAGE P	Press [1] [2] in service mode. Press [1] [4] in Magenta Picture Output mode. *I/P are switched alternately.
RTSC Return in XP (A & V)	AV1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace/ XP/ Audio 48kHz EE2 I XP 48 Switch Interlace/Progressive EE2 P XP 48 Audio 44.1 kHz/ 48 kHz Switch EE2 P XP 44	Press [1] [3] in service mode. Press [1] [4] in RTSC Return XP mode. *I/P are switched alternately. Press [2] [4] in RTSC Return XP mode. *48 kHz / 44.1 kHz are switched alternately.
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace SERVICE I Switch Interlace/Progressive SERVICE P	Press [1] [4] in I/P Switch mode. *I/P are switched alternately.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.	TIMER MUTE	Press [2] [1] in service mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B..	MAIN MUTE	Press [2] [2] in service mode.
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) AUDIO 48	Press [2] [3] in service mode.
		Audio 44.1kHz/48kHz switching AUDIO 44	Press [2] [4] in Audio Pattern Output mode. *48 kHz / 44.1 kHz are switched alternately.
HDD READ inspection	Perform a complete read inspection of the HDD.	When the HDD is OK HDD RDOK If the HDD is defective HDD RDNG□○○ □ :Judge of Forward rate. *When normal (Forward rate is 35Mbps or more, and there is no HDD error):□is Space. *When Abnormal (Forward rate is less than 35Mbps or HDD error existing):□ is X. ○○ :Number of what have spent time for seeking is over 100ms. *When normal:○○ are spaces. *When Abnormal: Display Number of what have spent time for seeking over 100ms. However, if the number is more than 100, display [XX]. We judge it is normal that the number is less than 4.	Press [3] [1] in the service mode. *When canceling the checking mode while executing, do "forced power-off". Method: Press the "POWER" button more than 10 seconds.
Laser Used Time Indiction	Check laser used time (hours) of drive.	LASER***** I(*****) is the used time display in hour. ILaser used time of DVD/ CD in Playback/Recording mode is counted.	Press [4] [1] in service mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.	CLR LASER	Press [9] [5] in service mode.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
RAM Drive Last Error	RAM Drive error code display. *For details about the drive error code, refer to the Service Manual for the specific RAM Drive. *Details are described in "**8. Service Explorer**".	1. Error Number is displayed for 5 seconds. NO ** 2. Time when the error has occurred is displayed for 5 seconds. YMMDDhhmmss Y: Year MM: Month DD: Day hh: Hour mm: Minute ss: Second 3. Last Drive Error (1/2) is displayed for 5 seconds. ****** 4. Last Drive Error (2/2) is displayed for 5 seconds. ******** 5. Error occurring Disc type is displayed for 5 seconds. MEDIA****** 6. Disc Maker ID is displayed for 5 seconds. ********** 7. Factor of Drive Error occurring is left displayed INFO******	Press [4] [2] in service mode. When "INFO******" is being displayed, past 19 error histories can be displayed by pressing [0] [1] - [1] [9] In case that the maker cannot be identified, display is black out.
Delete the Last Drive Error	Delete the Last Drive Error information stored on the DVD RAM-Drive.	CLR DRIVE	Press [9] [6] in service mode.
Turn on all FL/LEDs	All segments of FL and all LEDs are turned on.	All segments are turned on.	Press [5] [1] in service mode.
PB HIGH Signal Output	8 pin of AV 1 Jack (PB HIGH terminal) is High (approx. 11V DC).	PB8 HIGH	Press [5] [2] in service mode.
PB MIDDLE Signal Output	8 pin of AV 1 Jack (PB HIGH terminal) is Middle (approx. 5.5V DC).	PB8 MIDDLE	Press [5] [3] in service mode.
Front connection inspection	Press all front keys and check the connection between Main P.C.B. and Front key Switches.	000Γ ** (1) (2) (1) Each time a key is pressed, segment turned on increases one by one. (2) Total umber of keys that have been pressed.	Press [5] [4] in service mode.
Production Date Display	Display the date when the unit was produced.	PD YYYYMMDD YYYY: Year MM: Month DD: Day	Press [6] [1] in service mode.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Display the accumlated working time	Display the accumulated unit´s working time.	⁕⁕⁕⁕⁕⁕⁕⁕⁕⁕ S (Indicating unit: Second)	Press [6] [4] in service mode.
Display the Error History	Display the Error History stored on the unit.	Display reason of error for 5 seconds. FTREC⁕⁕⁕ Display the time when the error has occurred for 5 seconds.. YYMMDDHHMM YY: Year MM: Month DD: Day HH: Hour MM: Minute Accumulated working time till occuring of the error is left displayed. ⁕⁕⁕⁕⁕⁕⁕⁕⁕⁕ S (Indicating unit: Second)	Press [6] [5] in service mode. Then press [0] [1] ~ [1] [9], the past 19 error histories are displayed.
Delete the Error History	Delete Error History information stored on the unit.	CLR FTREC	Press [9] [7] in service mode.
SD card WRITE check	Check SD card WRITE function with SD card slot.	When the WRITE check is OK. SDCD OK When the WRITE check is NG. SDCD NG ***Note:** The image stored in the SD card will be erased.	Insert a SD card to SD card slot, and press [7] [4] in service mode. *Insert SD card while the power is off. *Check for [CARD SD] display on the FL display and go on the procedure.
AV4(V) / AV1(RGB) I/O Setting	Set input to AV4 (V) and set output to AV1 (RGB) for I/O checking	AV4V-AV1RGB	Press [8] [0] in service mode.
AV2(Y/C) / AV1(V) I/O Setting	Set input to AV2 (Y/C) and set output to AV1 (V) for I/O checking	AV2YC-AV1V	Press [8] [1] in service mode.
AV2(V) / AV1(Y/C) I/O Setting	Set input to AV2 (V) and set output to AV1 (Y/C) for I/O checking	AV2V-AV1 YC	Press [8] [2] in service mode.
AV2(RGB) / AV1(V) I/O Setting	Set input to AV2(RGB) and set output to AV1(V) for I/O checking	AV2RGB-AV1V	Press [8] [3] in service mode.
P50(H) Output	Timer Microprocessor IC7501-83 output High signal for AV1-pin 10 passing through inverter (approx. 0V DC at AV1-pin 10).	P50 HIGHOUT When OK. P50 HIGH OK When NG. P50 HIGH NG	Press [8] [4] in service mode.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
P50(L) Output	Timer Microprocessor IC7501-83 output Low signal for AV1-pin 10 passing through inverter (approx. 4.4V DC at AV1-pin 10).	P50 LOW OUT When OK. P50 LOW OK When NG. P50 LOW NG	Press [8] [5] in service mode.
Tray OPEN/CLOSE Test	The RAM drive tray is opened and closed repeatedly.	NO******** "*" is number of open/close cycle times.	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button of Remote Controller more than 10 seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	CLR E-CODE	Press [9] [8] in service mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting.	CLR SERV	Press [9] [9] in service mode.
Finishing service mode	Release Service Mode.	Display in STOP (E-E) mode. ***********	Press power button on the front panel or Remote controller in service mode.

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10 Assembling and Disassembling

> **Caution:**
> Original screws should be used.

10.1. Disassembly Flow Chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart below.

```
                          ┌──────────────────┐
                          │ 10.3. Top Case   │
                          └──────────────────┘

┌──────────────────┐
│ 10.4. Front Panel│
└──────────────────┘

┌──────────────────┐ ┌──────────────┐ ┌────────────────────┐ ┌──────────────────┐
│10.5. SD Card P.C.B│ │ 10.7. HDD    │ │10.10. Power P.C.B. │ │10.11. Rear Panel │
└──────────────────┘ └──────────────┘ └────────────────────┘ └──────────────────┘

┌──────────────────┐ ┌────────────────────────────────┐ ┌──────────────────┐
│10.6. Digital P.C.B│ │10.8. LED P.C.B. and DV Jack P.C.B│ │10.11.1. Fan Motor│
└──────────────────┘ └────────────────────────────────┘ └──────────────────┘

          ┌──────────────────────┐ ┌──────────────────┐ ┌──────────────────────┐
          │10.9. DVD-RAM Drive    │ │10.13. Main P.C.B.│ │10.12. Front(L) P.C.B.│
          └──────────────────────┘ └──────────────────┘ └──────────────────────┘

                      ┌──────────────────────────────┐
                      │10.14. Tuner P.C.B. and        │
                      │      Nicam Decorder P.C.B.     │
                      └──────────────────────────────┘
```

10.2. P.C.B. Positions

Power P.C.B.

DVD-RAM DRIVE

Main P.C.B.

U/V Tuner

Front (L) P.C.B.

Front Panel

DV Jack P.C.B.

SD Card P.C.B.

Digital P.C.B.   LED P.C.B.

Tuner P.C.B.

Nicam Decorder P.C.B.

HDD

24
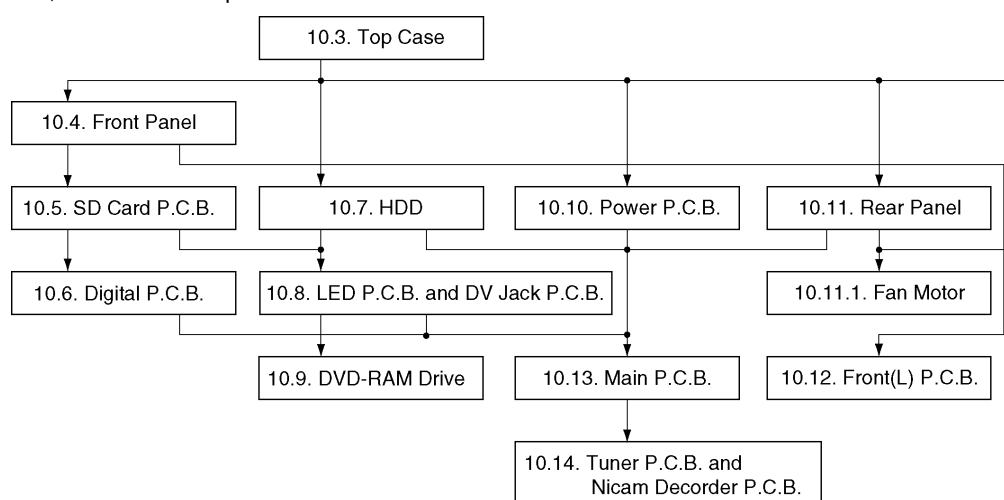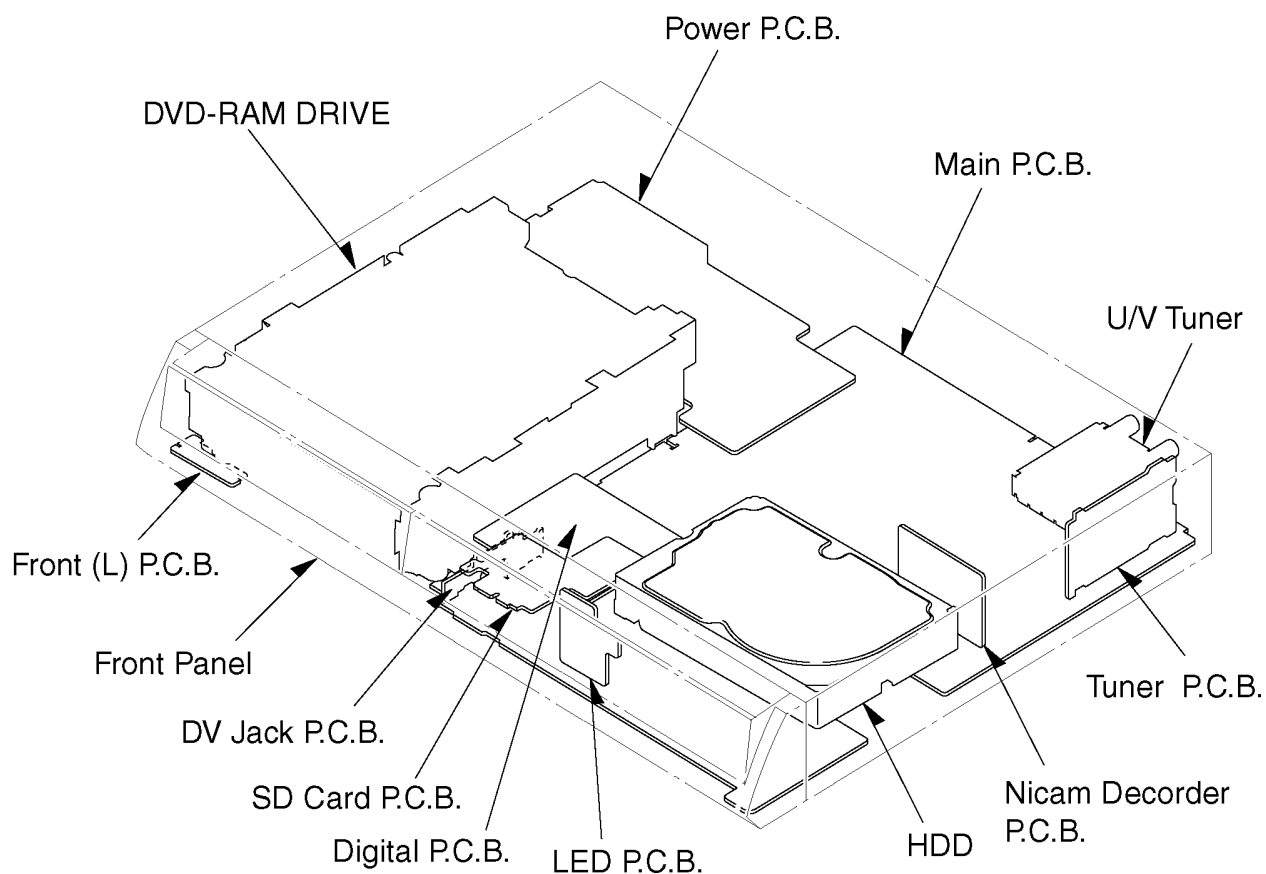
10.3. Top Case

1. Remove the 2 screws (A) and 3 screws (B).

2. Slide Top Case rearward and open the both ends at rear side of the Top Case a little and lift the Top Case in the direction of the arrows.
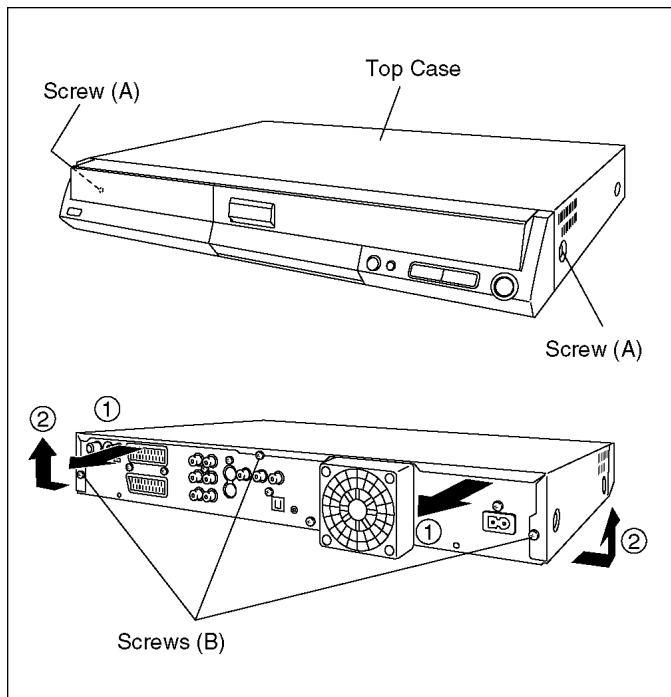
10.4. Front Panel

1. Unlock 2 tabs (A) and 3 tabs (B) in this order to remove Front Panel.

   (The tab (A) and (B) should be unlocked at the same time, respectively.)
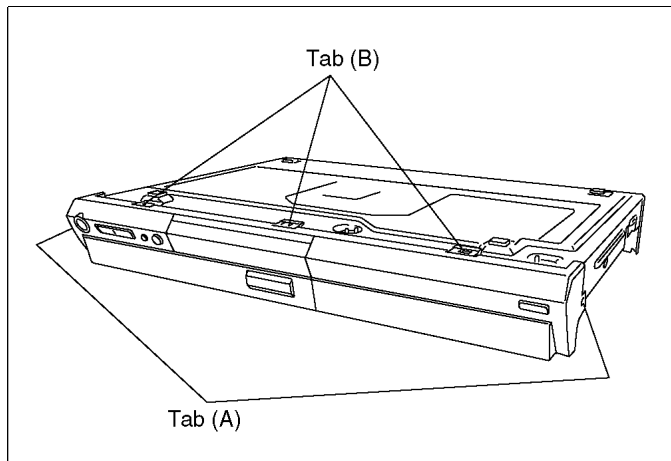
10.5. SD Card P.C.B.

1. Remove 2 Screws (A) to remove SD Card P.C.B.
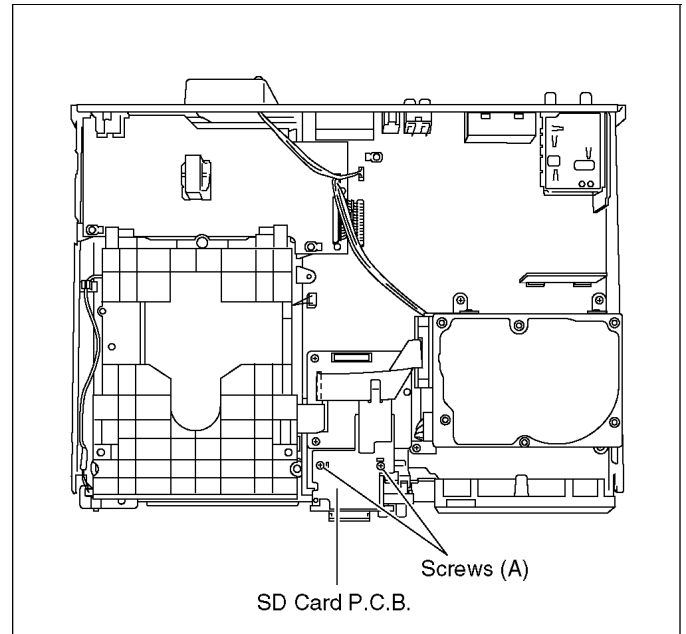
10.6. Digital P.C.B.

1. Remove 2FFCs and 2 Screws (A).

2. Lift up Digital P.C.B. slightly so to disconnect Connector to remove Digital P.C.B.
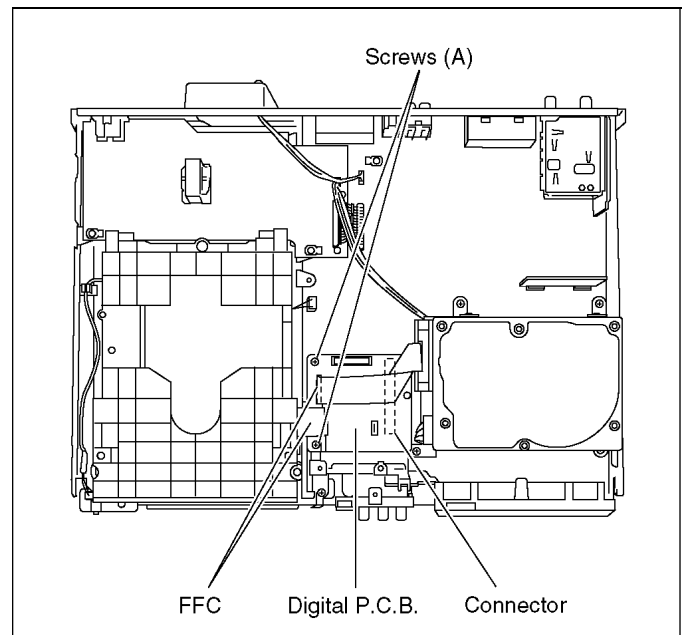
CAUTION:

When replacing Digital P.C.B., pay attention as below.

Parallel

Insert the FFC so that it is parallel to the connector.

After inserting the FFC, check that the FFC does't incline.
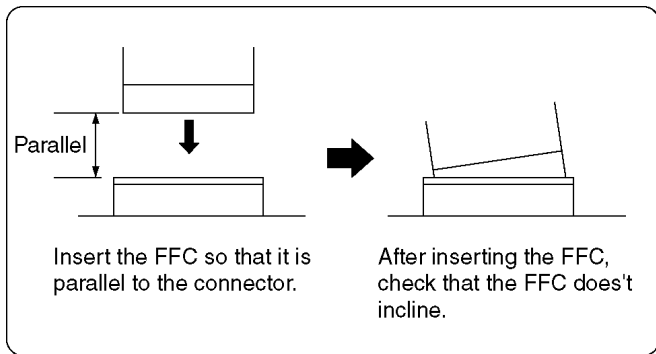
10.7. HDD

When replacing with Digital P.C.B., "UNFORMAT" indication is displayed and HDD must be formatted.

After that, **programme in the HDD will be lost**.

- How to format the HDD -

1) After "UNFORMAT" is displayed on the FL display, warning message for HDD format is appeared on the TV screen.

2) Select "YES" and press "ENTER" button on the remote controller, HDD will be formatted automatically.

1. Remove ATAPI Connector and HDD Power Connector.

2. Remove 4 Screws (A) to remove HDD Angle with HDD.

HDD Angle   ATAPI Connector   Screws (A)

HDD Power Connector   HDD
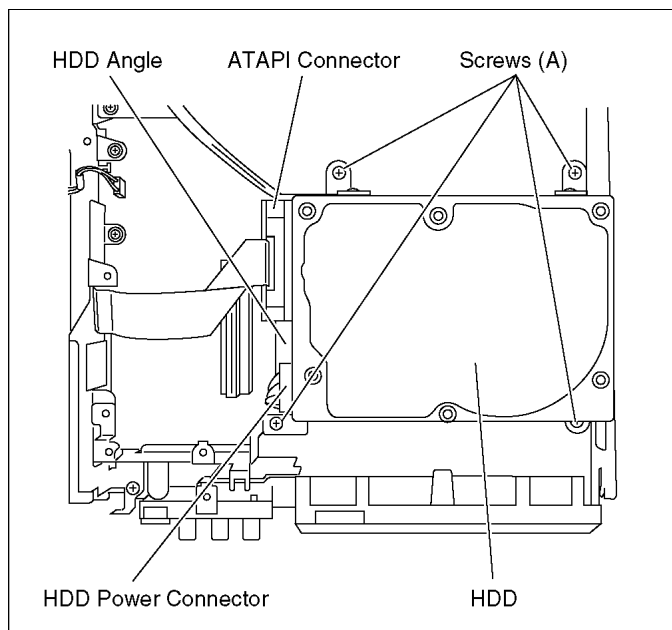
3. **Put HDD with HDD Angle up and down inversely so as not to give a shock to HDD.**
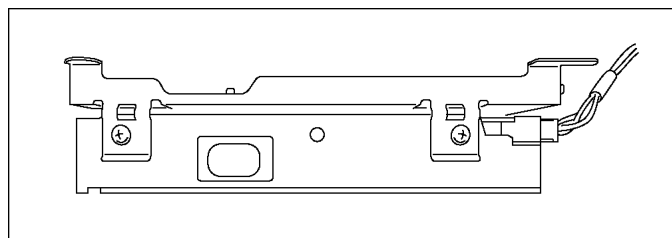
4. Remove 4 screws to remove HDD.
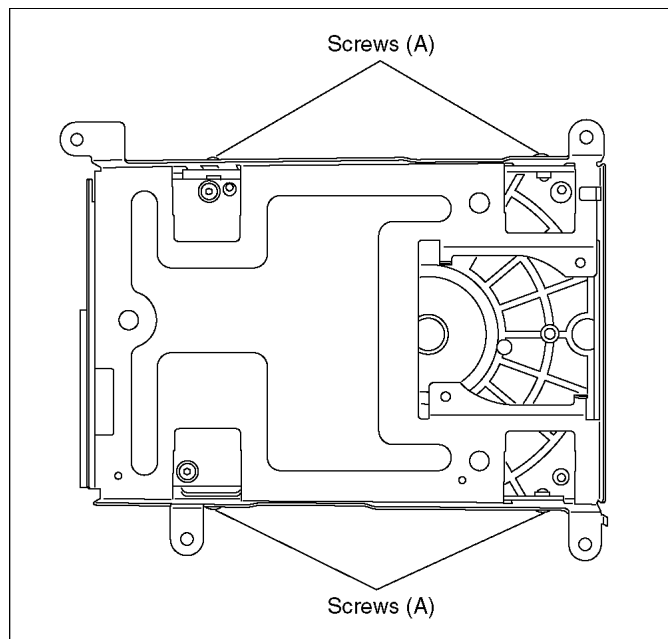
Screws (A)

Screws (A)

Caution for Attaching HDD

Put HDD up and down inversely so as not to give a shock to HDD, and put HDD Angle on to HDD and tighten 4 screws while lifting HDD Angle so as to keep maximum gap between HDD and HDD Angle.

Maximum Gap
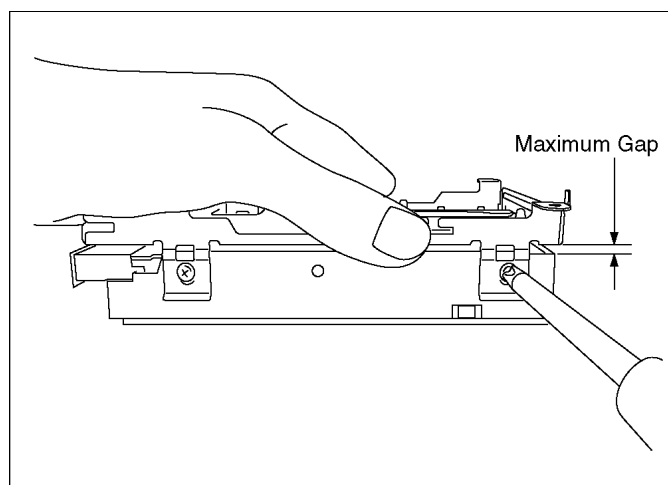
Handling of HDD

The following precautions should be taken when handling HDD.

a. Never give an impact to HDD. (Even a drop from 1cm height can be a cause of HDD failure.)

b. When placing HDD on a workbench, provide a mat on a bench for shock absorption and anti-static purposes.

c. When installing HDD, release it from your hands only after confirming that it is fully set on the chassis.

d. Avoid stacking up HDD.

e. HDD is unstable and easy to fall. Do not stand it on its side face.

f. When handling HDD, hold its side faces to avoid static hazard.

g. Do not place HDD on its wrapping bag after removal. (Prevention of static hazard)

h. Use a screwdriver with low impact and anti-static features.

Note:

When replacing HDD, please make the rear jumper slave or cable select configuration.

10.8. LED P.C.B. and DV Jack P.C.B.

1. Remove a Screw (A) to remove SD Card P.C.B. Angle with DV Jack P.C.B..

Screw (A)

SD Card P.C.B. Angle with DV Jack P.C.B.
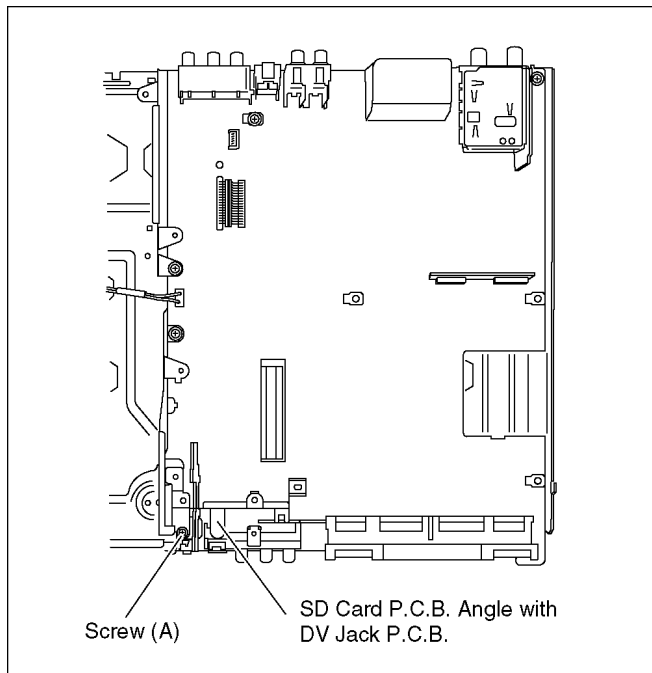
2. At first disconnect the connector on one side as shown below, and pull out LED P.C.B.

Pull

LED P.C.B.
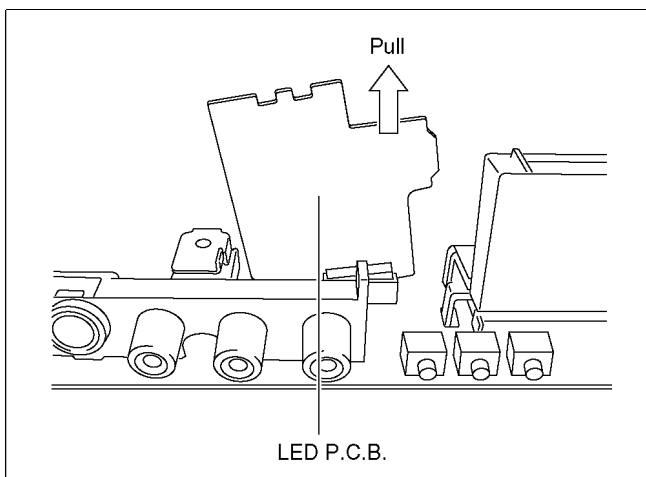
10.9. DVD-RAM Drive

1. Remove 3 Screws (A) to remove DVD-RAM Drive.

2. Lift up DVD-RAM Drive slightly and remove FFC and remove Cable between DVD-RAM Drive and Main P.C.B.

Screws (A)

Top View

DVD-RAM Drive

Side View

Cable   FFC
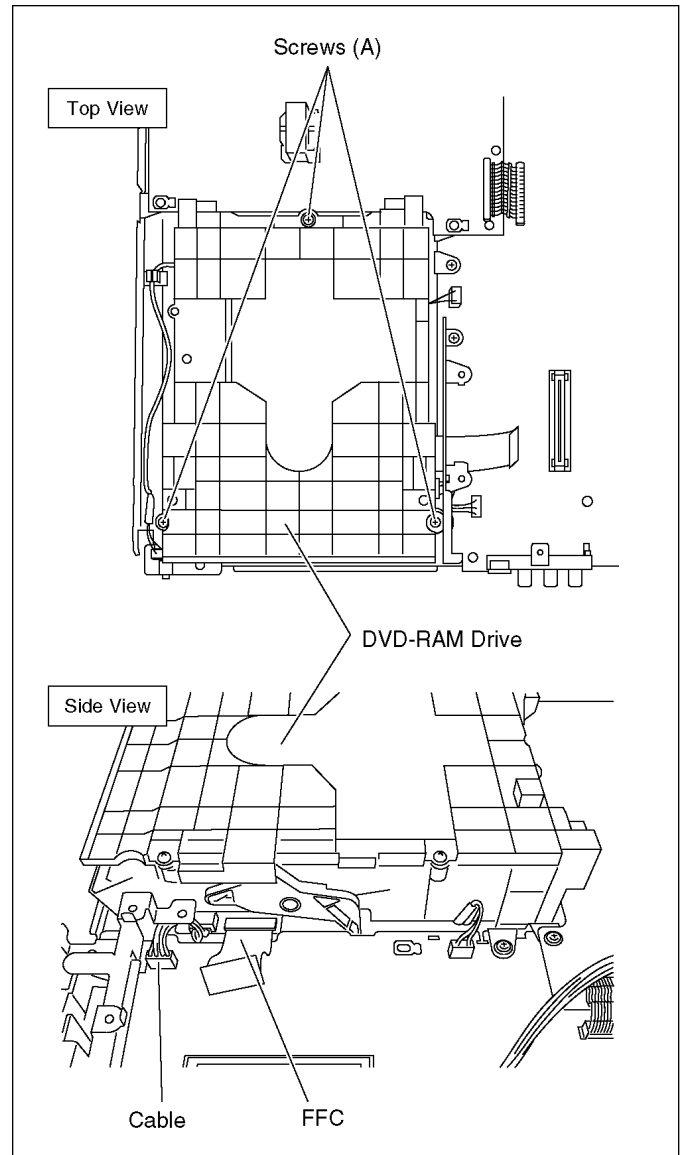
10.10. Power P.C.B.

1. Remove Screw (A).
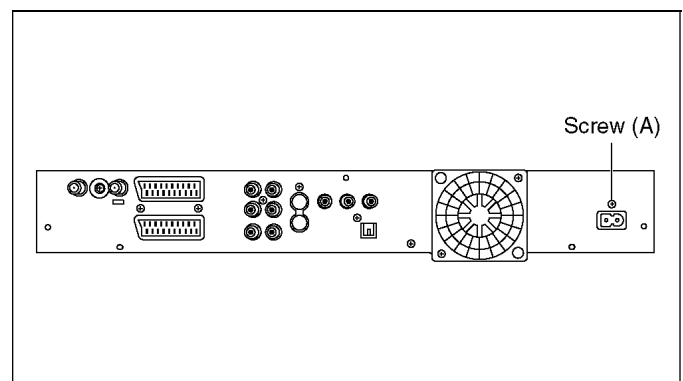
Screw (A)

2. Remove 3 Screws (B) and disconnect Connector (A) and HDD Power Connector.

3. Unlock Power P.C.B. from a Flange to remove Power P.C.B.

Flange   Screws (B)   Connector (A)   HDD Power Connector

Power P.C.B.

Hold thumb and index finger and remove connector vertically.
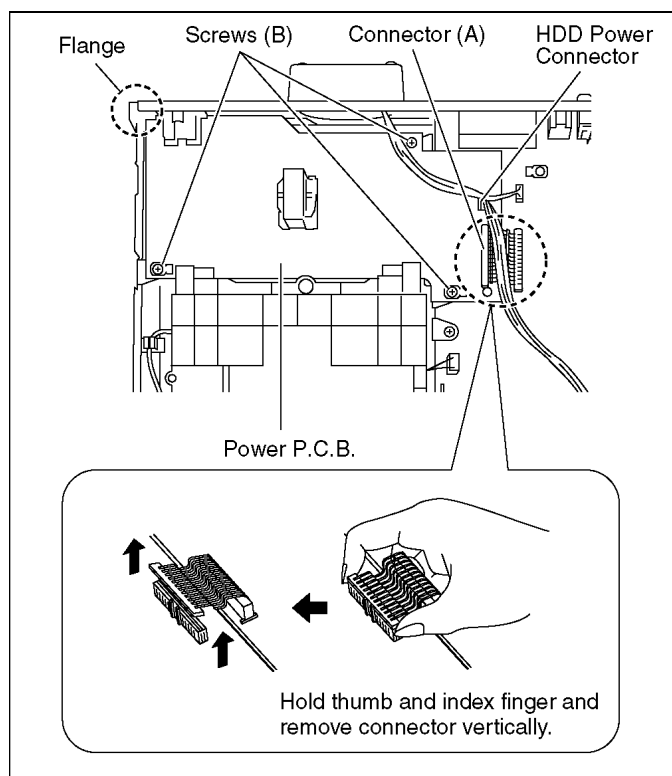
10.11. Rear Panel

1. Disconnect Fan Connector.
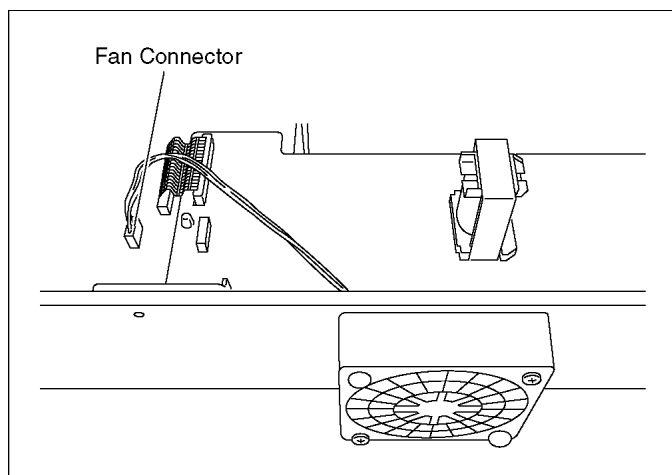
Fan Connector

2. Remove 7 Screws (A) and Screw (B).
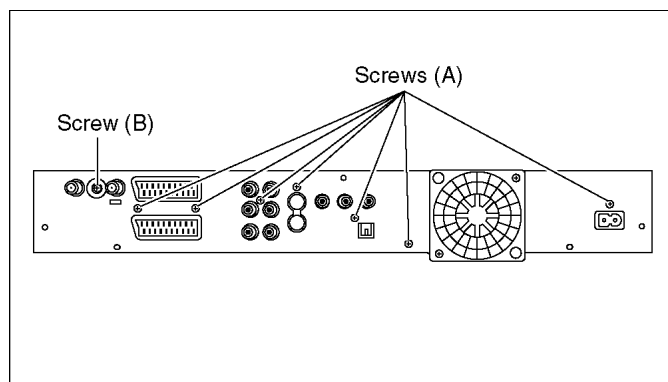
Screws (A)

Screw (B)

3. Unlock 2 Locking Tabs (A) to remove Rear Panel.

Rear Panel
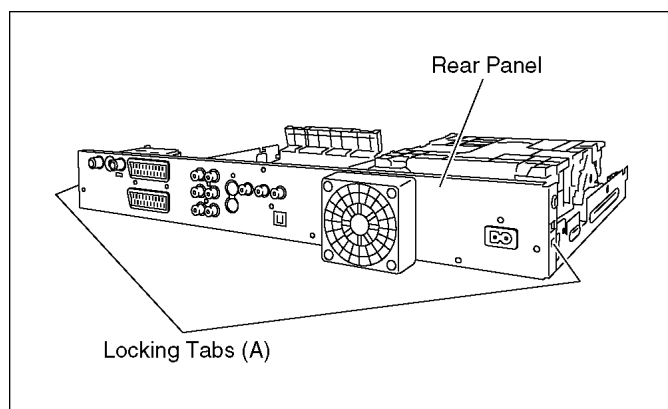
Locking Tabs (A)

10.11.1. Fan Motor

1. Disconnect Fan Connector and remove 2 Screws (C).

2. Push and unlock 2 locking Tabs (A) to remove Fan Motor.

Fan Connector   Screws (C)

Push

Push

Locking Tabs (A)
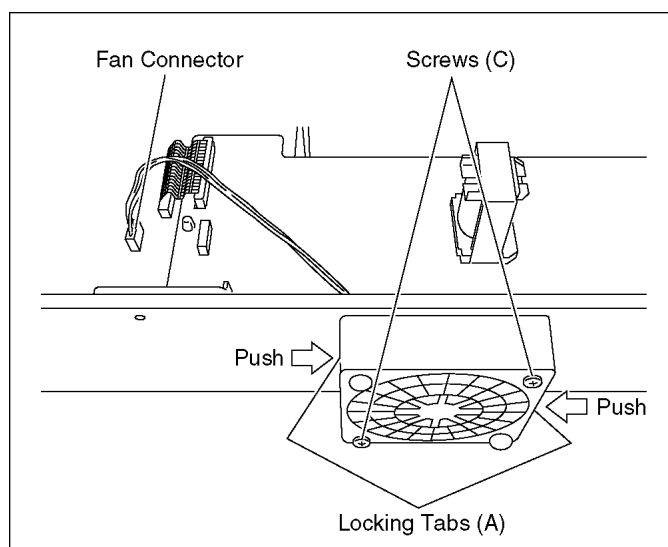
10.12. Front (L) P.C.B.

1. Remove a Screw (A) to remove Front (L) P.C.B.
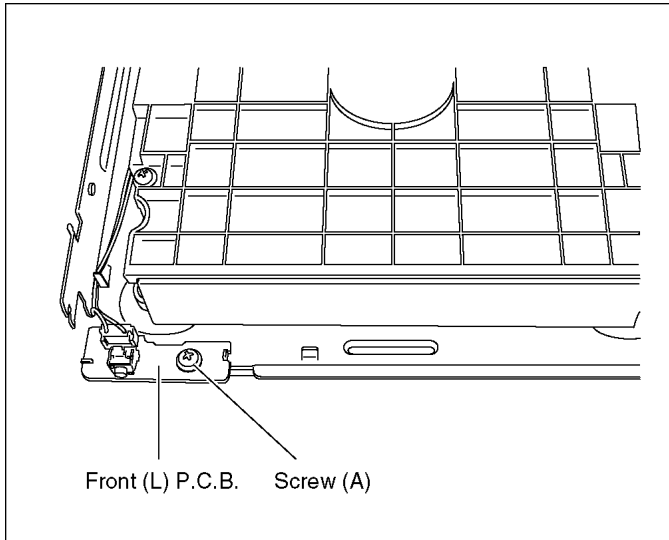
Front (L) P.C.B.   Screw (A)

10.13. Main P.C.B.

1. Disconnect Connector (A) for Front (L) P.C.B.
2. Remove 5 Screws (A).
3. Remove Digital P.C.B. Angle and SD Card P.C.B. Angle with DV Jack P.C.B. and disconnect Connector (A) to remove Main P.C.B.

Screws (A)

Connector (A)

Digital P.C.B. Angle

SD Card P.C.B. Angle with DV Jack P.C.B.
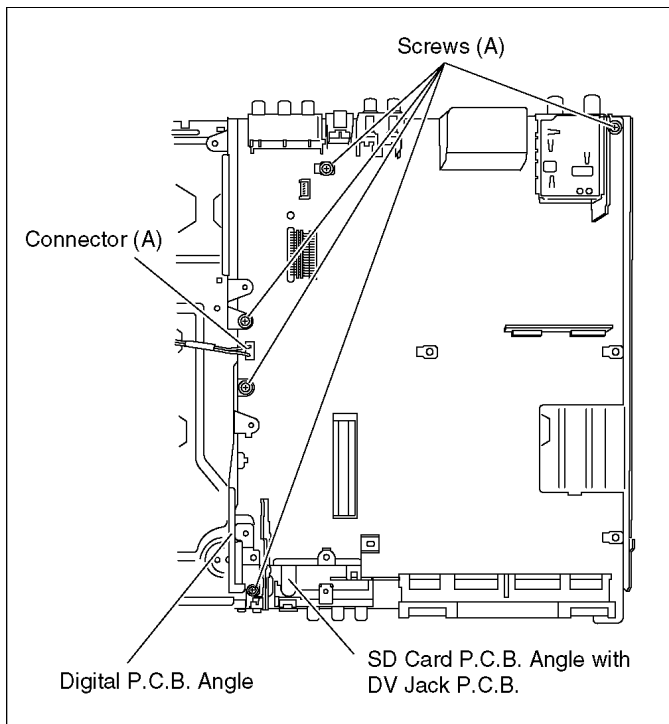
10.14. Tuner P.C.B. and Nicam Decoder P.C.B.

1. Pull out the Tuner P.C.B. in the direction of the arrow.
2. Remove the solders and pull out the Nicam Decoder P.C.B.

Tuner P.C.B.

PS7801

Nicam Decorder P.C.B.

PP7401

Solder (PK7301, PK7302)

Main P.C.B.

29
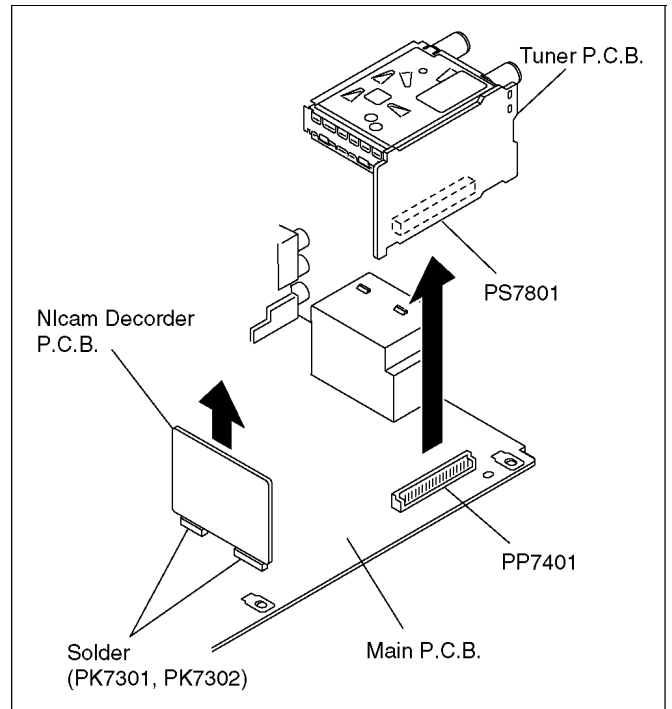
11 Service Fixture and Tools

Part Number	Description	Compatibility
RFKZ0125	Extension FFC (Digital P.C.B. - DVD-RAM Drive / 40 Pin)	Same as E50/ E55 series
RFKZ0126	Extension Cable (MainP.C.B. - DVD-RAM Drive/ 4 Pin)	Same as E30/HS2 series
RFKZ0216	Extension Cable (MainP.C.B. - Power P.C.B. / 23 Pin)	Same as E55 series
RFKZ0260	Extension Cable (MainP.C.B. - Digital P.C.B. / 88 Pin)	Same as EH50 series

12 Service Positions

Note:

For description of the disassembling procedure, see the section 10.

12.1. Checking and Repairing of Power P.C.B.

1. Top Case

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Case

2. Power P.C.B.

Remove 1 Screw for AC Inlet fixing

Remove 3 Screws fixing Power P.C.B.

Remove Connector (A) to Main P.C.B.

Unlock Power P.C.B. from a Flange to remove Power P.C.B.

Connect Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0216).

Put Power P.C.B. on Insulation Board so that it's foil side faces top.

Caution 1:
Red wire in the extension cable should be connected to (1) pin.
Caution 2:
Original screws should be used.

Extension Cable between
Main P.C.B. and Power P.C.B.
(RFKZ0216)

Flange

Foil side of Power P.C.B.

Connector (A)   Insulation Board

30
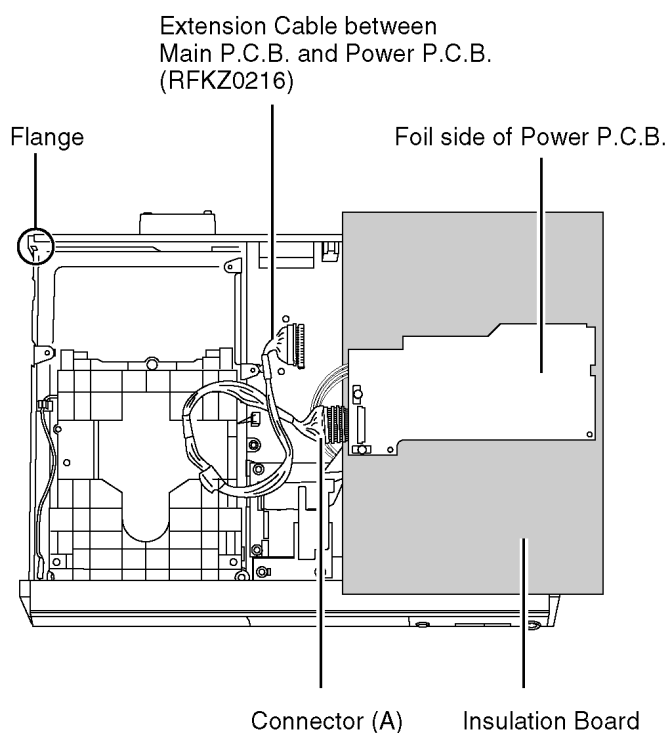
12.2. Checking and Repairing of Digital P.C.B.

1. Top Case

| Remove 2 Screws (A) on side |
| Remove 3 rear Screws (B) on rear |
| Remove Top Case |

2. Front Panel

| Unlock 2 Locking Tabs on side |
| Unlock 3 Locking Tabs on bottom |
| Remove Front Panel |

3. SD Card P.C.B.

| Remove 2 Screws |
| Remove SD Card P.C.B. |

4. Digital P.C.B.

| Remove FFC from Digital P.C.B. for RAM |
| Remove 2 Screws fixing Digital P.C.B. |
| Lift up Digital P.C.B. Slightly to remove it |

5. HDD

| Remove 4 Screws fixing HDD Angle to remove it with HDD |

6. SD Card P.C.B. Angle with DV Jack P.C.B.

| Remove a Screw to remove SD Card P.C.B. Angle with DV Jack P.C.B. |

Remove 3 Screws fixing RAM Drive. While lifting up DVD-RAM Drive slightly, remove FFC and connect Extension Cables between DVD-RAM Drive and Digital P.C.B. (RFKZ0125).
Connect Extension Cable between Main P.C.B. and Digital P.C.B. (RFKZ0260).

Caution 1:
Red wire in the extension cable should be connected to (1) pin.
Caution 2:
Original screws should be used.

Insulation Board

Digital P.C.B.

Red Wire (1 pin)

Extension Cable between
Digital P.C.B. and DVD-RAM Drive
(RFKZ0125)

Extension Cable between
Main P.C.B. and Digital P.C.B.
(RFKZ0260)
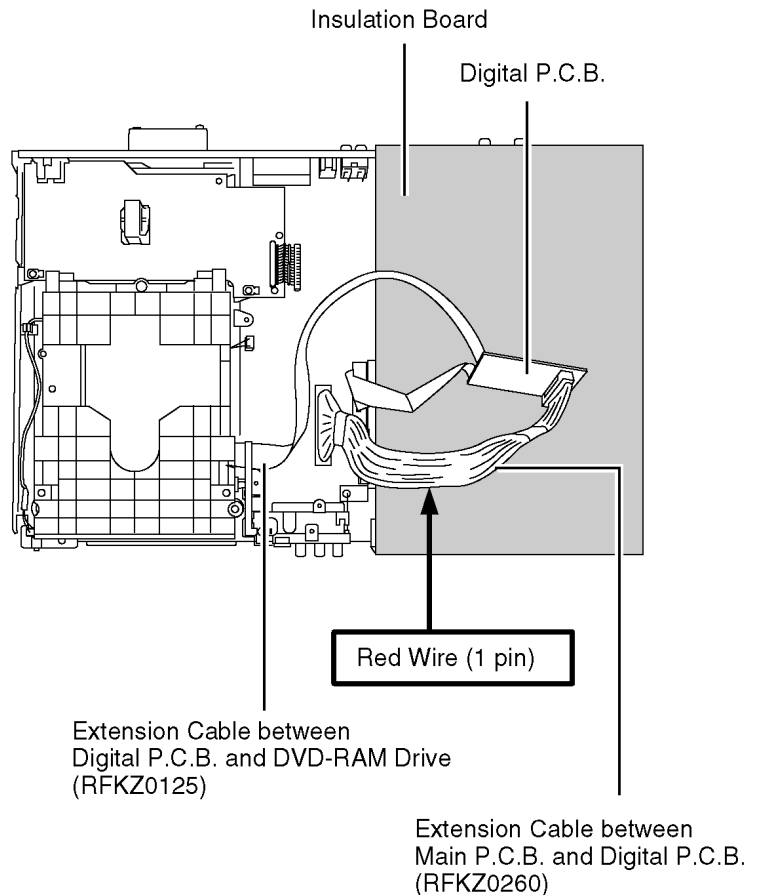
12.3. Checking and Repairing of Main P.C.B.

1. Top Case

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Case

2. Front Panel

Unlock 2 Locking Tabs on side

Unlock 3 Locking Tabs on bottom

Remove Front Panel

3. Fan Motor

Remove 2 Screws fixing Fan Motor

Disconnect Fan Cable Connector

Unlock 2 Locking Tabs to remove Fan Motor

4 . Rear Panel

Remove 8 Screws (one is for Tuner)

Unlock 2 Locking Tabs on side

Remove Rear Panel

5. Power P.C.B.

Remove 3 Screws fixing Power P.C.B.

Remove Connector (A) to Main P.C.B.

Unlock Power P.C.B. from a Flange to remove Power P.C.B.

6. SD Card P.C.B.

Remove 2 Screws

Remove SD Card P.C.B.

7. Digital P.C.B.

Remove FFC from Digital P.C.B.

Remove 2 Screws fixing Digital P.C.B.

Lift up Digital P.C.B. slightly to remove it

8. HDD

Remove 4 Screws fixing HDD Angle to remove it with HDD

9. Digital P.C.B. Angle & SD Card P.C.B. Angle with DV Jack P.C.B.

Remove 3 Screws to remove Digital P.C.B. Angle and SD Card P.C.B. Angle with DV Jack P.C.B.

10. DVD-RAM Drive

Remove Cable between RAM Drive and Main P.C.B.

Remove 3 Screws fixing RAM-Drive

Lift up DVD-RAM Drive to remove it

Remove FFC from DVD-RAM Drive

11. Main P.C.B.

Remove a Screw to remove Front (L) P.C.B.

Unlock Clamper for Main-Front (L) Cable

Remove 2 Screws to remove Main P.C.B.

Attach Digital P.C.B. on to Main P.C.B.
Connect Fan Connector.
Connect Extension Cables between Main P.C.B. and DVD-RAM Drive (RFKZ0126), betweenDigital P.C.B. and DVD-RAM Drive (RFKZ0125), and between Main P.C.B. and Power P.C.B. (RFKZ0216)

Caution 1:
Red wire in the extension cable should be connected to (1) pin.
Caution 2:
Original screws should be used.

Front (L) P.C.B.

Fan Motor

Insulation Sheet

Power P.C.B.

Foil side of Main P.C.B.

Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0216)

DVD-RAM Drive

HDD

Extension Cable between Main P.C.B. and DVD-RAM Drive (RFKZ0126)

Extension Cable between Digital P.C.B. and DVD-RAM Drive (RFKZ0125)
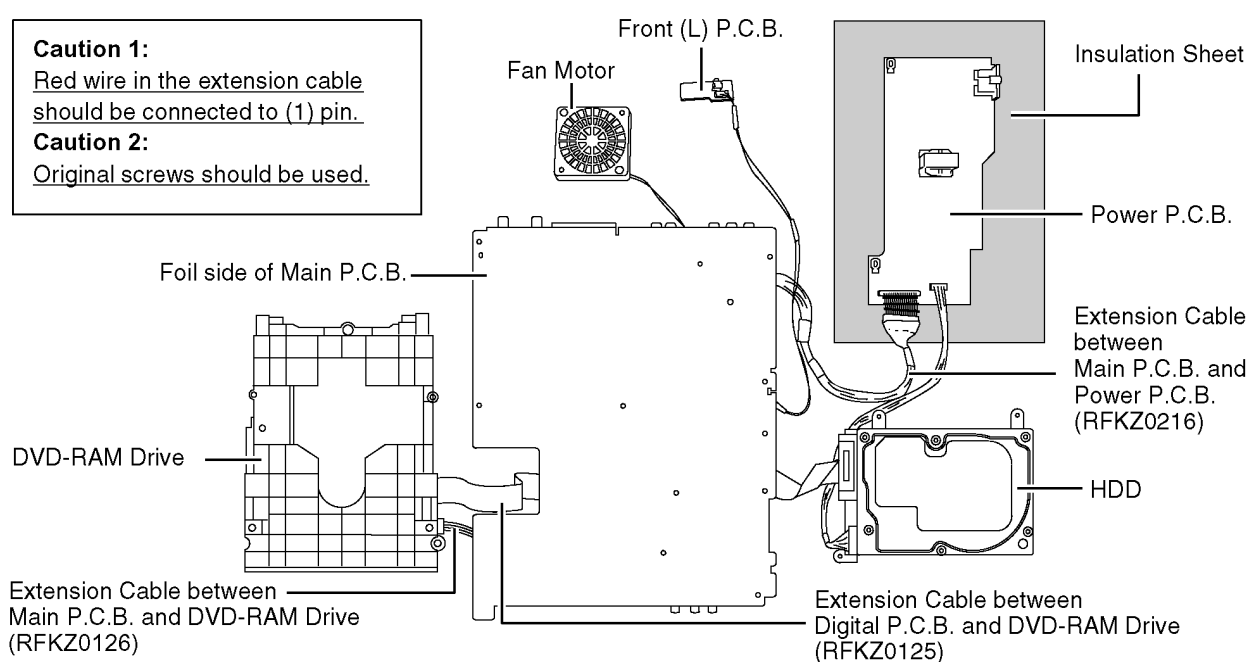
12.4. Checking and Repairing of DVD-RAM Drive

1. Top Case

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Case

2. Front Panel

Unlock 2 Locking Tabs on side

Unlock 3 Locking Tabs on bottom

Remove Front Panel

3. SD Card P.C.B.

Remove 2 Screws

Remove SD Card P.C.B.

4. Digital P.C.B.

Remove FFC from Digital P.C.B.

Remove 2 Screw fixing Digital P.C.B.

Lift up Digital P.C.B. slightly to remove it

5. HDD

Remove 4 Screws fixing HDD Angle to remove it with HDD

6. SD Card P.C.B. Angle with DV Jack P.C.B.

Remove a Screw to remove SD Card P.C.B. Angle with DV Jack P.C.B.

7. DVD-RAM Drive

Remove 3 Screws fixing RAM Drive

Lift up DVD-RAM Drive slightly and remove FFC from DVD-RAM Drive and remove Cable between DVD-RAM Drive and Main P.C.B.

Attach Digital P.C.B.

Put DVD-RAM Drive on side.

Connect Extension Cables between Main P.C.B. and DVD-RAM Drive, (RFKZ0126), and between Digital P.C.B. and DVD-RAM Drive (RFKZ0125).

Caution :
Original screws should be used.

DVD-RAM Drive

Digital P.C.B.

Extension Cable between Main P.C.B.and DVD-RAM-Drive (RFKZ0126)

Extension Cable between Digital P.C.B. and DVD-RAM Drive (RFKZ0125)
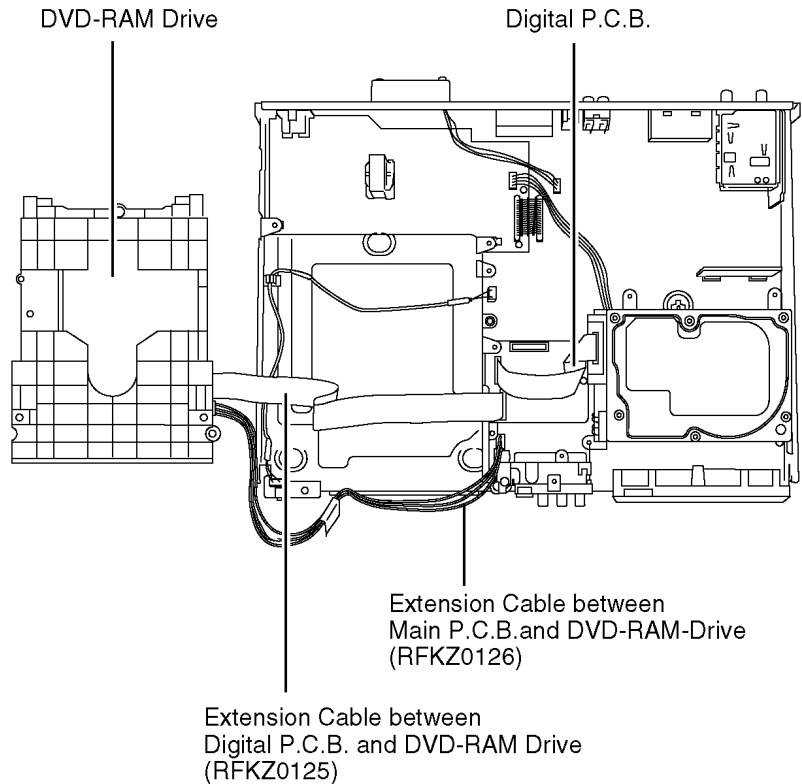
12.5. Checking and Repairing of HDD

1. Top Case

| Remove 2 Screws (A) on side |
| Remove 3 Screws (B) on rear |
| Remove Top Case |

2. HDD

| Disconnect HDD ATAPI Connector |
| Remove 4Pin Power Cable from HDD |
| Connect HDD ATAPI Connector to Replacement HDD |
| Connect 4Pin Power Cable to Replacement HDD |
| Put Replacement HDD on Insulation Board |

Caution for Removing HDD

Put HDD with HDD Angle up and down inversely and remove 4 screws to remove HDD so as not to give a shock to HDD.
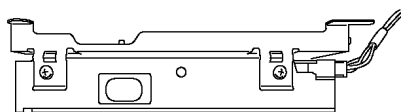
Caution for Attaching HDD

Put HDD up and down inversely, and put HDD Angle on to HDD and tighten 4 screws while lifting HDD Angle so as to keep maximum gap between HDD and HDD Angle.

Maximum Gap

Caution :
Original screws should be used.

Replacement HDD

ATAPI Connector

HDD Power Cable
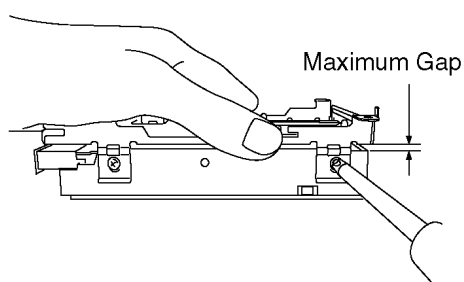
Isulation Board
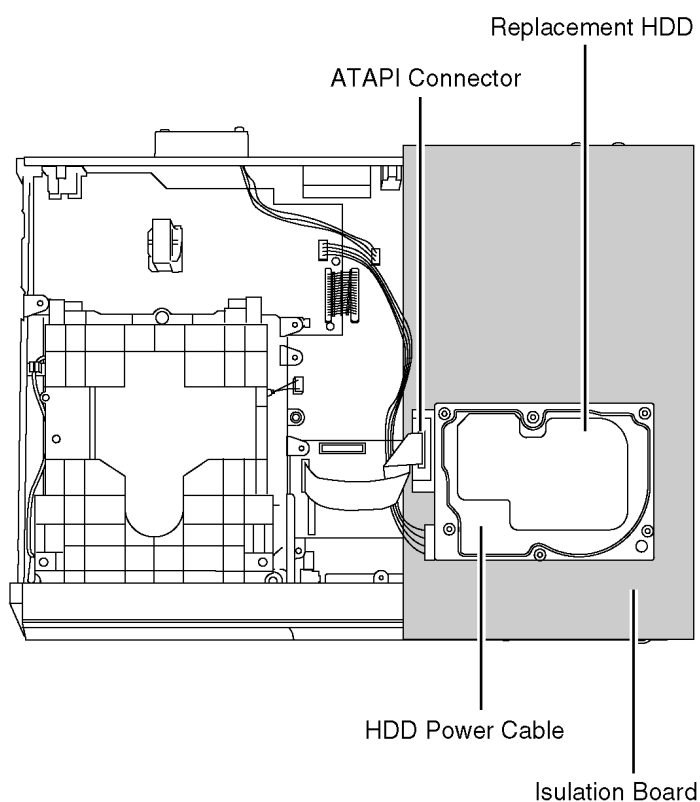
13 Caution after replacing parts

13.1. After replacing the RAM Drive with new one

After replacing RAM drive unit, TEST mode is not necessary. Please confirm operation for RAM drive

13.2. When the unit does not operate normally after replacing the Timer Microprocessor or Main P.C.B.

When the unit does not operate normally after replacing the Timer Microprocessor or Main P.C.B. with new one, reset Timer Microprocessor.

Step	Operation	Descriptions
1	While power is ON, short IC7502-4 pin (RESET) and the GND momentarily.	"RESET (L)" is transmitted to the RESET-L of Timer Microprocessor (IC7501-11 pin), then the unit operates normally.

14 Standard Inspection Specifications after Making Repairs

After making repairs, we recommend performing the following inspection, to check normal operation.

No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the picture, sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation. *Panasonic DVD-RAM disc should be used when recording and playback.
5	Model with the HDD: Perform auto recording and playback for one minute using the HDD.	No abnormality should be seen in the picture, sound or operation.
6	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
7	Models with SD Card Slot or DV Input Jack: In case of that the trouble is caused by SD card and/or DV terminal.	Models with SD Card Slot or DV Input Jack; 1) SD card: Check to be able to display and copy the picture. 2) DV terminal: Check to be able to record from DVC.
8	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appears in the FL displays. *[UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
9	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR SERV] appears in the FL display. After checking it, turn the power off.
10	When replacing of RAM drive, transfer [9] [5] in the service mode setting to delete Laser used time.	Make sure that [CLR LASER] appears in the FL display. After that, turn power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

Item	Contents	Check	Item	Contents	Check
Picture	Block noise		Sound	Distorted sound	
	Crosscut noise			Noise (static, background noise, etc.)	
	Dot noise			The sound level is too low.	
	Picture disruption			The sound level is too high.	
	Not bright enough			The sound level changes.	
	Too bright				
	Flickering color				
	Color fading				

15 Voltage and Waveform Chart

Note)

Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

15.1. Power P.C.B.

Ref No.	IC1150										IC1200								
MODE	1	2	3	4	5	6	7	8	9		1	2	3						
REC	3.0	1.5	0	11.6	0	-	310	-	-1523		8.3	2.5	0						
PLAY	3.0	1.5	0	11.6	0	-	310	-	-1523		8.3	2.5	0						
STOP	3.0	1.5	0	11.6	0	-	310	-	-1538		8.3	2.5	0						

Ref No.	IC1400									IC1401						IC1501				
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5		1	2	3	4	5
REC	12.4	0	1.4	4.3	0	0.9	0.8	1.1		5.6	4.9	5.2	2.7	0		0	0	0	5.1	5.1
PLAY	12.4	0	1.4	4.3	0	0.9	0.8	1.1		5.6	4.9	5.2	2.7	0		0	0	0	5.1	5.1
STOP	12.4	0	1.4	4.3	0	0.9	0.8	1.1		5.6	4.9	5.2	2.7	0		0	0	0	5.1	5.1

Ref No.	IC1601									IC1701								
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
REC	12.3	4.5	1.2	1.3	0.8	0	7.6	12.3		12.4	4.5	1.2	1.3	0	0	8.5	12.4	
PLAY	12.3	4.5	1.2	1.3	0.8	0	7.6	12.3		12.4	4.5	1.2	1.3	0	0	8.5	12.4	
STOP	12.3	4.5	1.2	1.3	0.8	0	7.6	12.3		12.4	4.5	1.2	1.3	1.2	0	8.5	12.4	

Ref No.	Q1200					Q1270									Q1400					
MODE	1	2	3	4		1	2	3	4	5	6	7	8		1	2	3	4	5	6
REC	9.3	8.3	0	1.5		12.4	12.4	12.4	6.2	12.4	12.4	12.4	12.4		6.1	6.1	7.6	12.3	6.2	6.2
PLAY	9.3	8.3	0	1.5		12.4	12.4	12.4	6.2	12.4	12.4	12.4	12.4		6.1	6.1	7.6	12.3	6.2	6.2
STOP	9.3	8.3	0	1.5		12.4	12.4	12.3	6.2	12.4	12.4	12.4	12.4		5.9	6.2	7.6	12.3	6.3	6.2

Ref No.	Q1600									Q1700						
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	
REC	12.3	12.3	12.3	7.6	5.5	5.4	5.5	5.6		3.0	3.0	8.5	12.4	2.9	3.0	
PLAY	12.3	12.3	12.3	7.6	5.5	5.4	5.5	5.6		3.0	3.0	8.5	12.4	2.9	3.0	
STOP	12.3	12.3	12.3	7.6	5.6	5.6	5.6	5.6		3.0	3.1	8.5	12.4	3.0	3.0	

Ref No.	QR1301			QR1302			QR1303			QR1304			QR1800		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
REC	0	0	3.3	0	0.1	5.0	0	4.9	0.1	0	0	5.0	11.9	0	12.3
PLAY	0	0	3.3	0	0.1	5.0	0	4.9	0.1	0	0	5.0	11.9	0	12.3
STOP	0	0	3.3	0	0.1	5.0	0	4.9	0.1	0	0	5.0	11.9	0	12.3

Ref No.	QR1801		
MODE	E	C	B
REC	0	4.5	0
PLAY	0	4.5	0
STOP	0	4.5	0

15.2. Main P.C.B.

Ref No.	IC1501									IC1502								
MODE	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
REC	5.0	0	0	3.4	4.9	0	0	5.6		3.3	0	0	2.0	4.9	0	0	3.6	
PLAY	5.0	0	0	3.4	4.9	0	0	5.6		3.3	0	0	2.0	4.9	0	0	3.6	
STOP	5.0	0	0	3.4	4.9	0	0	5.6		3.3	0	0	2.0	4.9	0	0	3.7	

Ref No.	IC1504						IC1505								
MODE	1	2	3	4	5		1	2	3	4	5	6	7	8	
REC	3.6	3.2	3.3	2.6	0		3.3	0	0	1.9	4.1	0	4.6	3.6	
PLAY	3.6	3.2	3.3	2.6	0		3.3	0	0	1.9	4.1	0	4.6	3.6	
STOP	3.7	3.2	3.3	2.6	0		3.3	0	0	2.0	4.1	0	4.6	3.6	

Ref No.	IC1510						IC1511								
MODE	1	2	3	4	5		1	2	3	4	5	6	7	8	
REC	5.6	4.9	5.0	0	0		5.2	0	0	3.6	5.7	0	0	5.7	
PLAY	5.6	4.9	5.0	0	0		5.2	0	0	3.6	5.7	0	0	5.7	
STOP	5.6	4.9	5.0	0	0		5.2	0	0	3.6	5.7	0	0	5.7	

Ref No.	IC3001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	0	1.7	1.7	1.6	0.4	0	1.7	1.7
PLAY	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	0	1.7	1.7	1.6	0.4	0	1.7	1.7
STOP	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	1.6	1.6	0.4	0	1.7	1.7	1.6	0.4	0	1.7	1.7

Ref No.	IC3001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	0	0.3	1.6	0	1.6	5.0
PLAY	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	0	0.3	1.6	0	1.6	5.0
STOP	0	1.7	1.6	1.7	5.0	1.4	0.2	1.4	0	2.1	1.6	0	1.6	0	2.1	0.3	1.6	0	1.6	5.0

Ref No.	IC3001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	4.5	4.5	9.1	4.4	4.4	4.5
PLAY	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	4.5	4.5	9.1	4.4	4.4	4.5
STOP	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.5	4.0	4.5	4.5	4.4	3.8	3.9	9.1	4.0	4.3	3.7

Ref No.	IC3001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	4.5	4.5	4.5	4.5	9.0	0	0.9	0.9	1.4	1.4	4.5	4.5	4.5	4.5	0	4.5	9.5	4.5	4.5	0
PLAY	4.5	4.5	4.5	4.5	9.0	0	0.9	0.9	1.4	1.4	4.5	4.5	4.5	4.5	0	4.5	9.5	4.5	4.5	0
STOP	3.7	3.7	3.7	3.8	9.0	0	1.2	0.4	0.4	0.4	4.5	4.5	4.5	4.5	0.4	0.4	0.3	4.5	4.5	0

Ref No. IC3001

MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5
PLAY	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5
STOP	4.7	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.1	5.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5

Ref No. IC4009 / IC4011

MODE	1	2	3	4	5	6	7	8		1	2	3	4	5
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.3	0	4.9	5.7	5.0
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.3	0	4.9	5.7	5.0
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.3	0	4.9	5.7	5.0

Ref No. IC4012 / IC7401

MODE	1	2	3	4	5	6	7	8		1	2	3	4	5
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		12.3	4.2	11.6	2.6	0
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		12.3	4.2	11.6	2.6	0
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		12.3	4.2	11.6	2.6	0

Ref No. IC7402 / IC7403

MODE	1	2	3	4	5	6		1	2	3	4	5	6	7	8
REC	5.6	0	5.6	1.8	0	5.1		5.0	0	0	2.7	4.1	0.3	0.4	5.6
PLAY	5.6	0	5.6	1.8	0	5.1		5.0	0	0	2.7	4.1	0.3	0.4	5.6
STOP	5.6	0	5.6	1.3	0	5.1		5.0	0	0	3.4	4.2	3.8	0	5.6

Ref No. IC7501

MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	0.3	4.9	3.8	0.8	0.8	4.4	0	0	0.7	1.2	5.0	1.4	0	2.1	3.3	4.9	3.3	3.2	3.2	3.1
PLAY	0.3	4.9	3.8	0.8	0.8	4.4	0	0	0.7	1.2	5.0	1.4	0	2.1	3.3	4.9	3.3	3.2	3.2	3.1
STOP	0.6	4.9	4.5	0.9	0.9	4.4	0	0	0.7	1.2	5.0	1.4	0	2.1	3.3	4.9	3.3	3.2	3.2	3.1

Ref No. IC7501

MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	0	0	1.3	3.3	0	0	0	0	4.6	0	0.9	1.6	1.2	5.0	2.6	0	0	0.1	3.3	3.3
PLAY	0	0	1.3	3.3	0	0	0	0	4.6	0	0.9	1.6	1.2	5.0	2.6	0	0	0.1	3.3	3.3
STOP	0	0	1.3	3.3	0	0	0	0	4.8	4.6	0	0.9	1.6	1.2	5.0	2.6	0	0	0.1	3.3	3.3

Ref No. IC7501

MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	0	3.3	3.2	3.3	0	0	5.0	0	4.9	4.9	4.9	0	4.9	5.1	5.0	0	0	0	0	4.9
PLAY	0	3.3	3.2	3.3	0	0	5.0	0	4.9	4.9	4.9	0	4.9	5.1	5.0	0	0	0	0	4.9
STOP	0	3.3	3.2	3.3	0	0	5.0	4.9	4.9	4.9	4.9	0	4.9	5.1	5.0	0	0	0	0	4.9

Ref No. IC7501

MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	4.9	4.9	0	0	0	0	0	5.0	0	0	0	0	0	0	0	4.9	0	0	4.1
PLAY	0	4.9	4.9	0	0	0	0	0	5.0	0	0	0	0	0	0	0	4.9	0	0	4.1
STOP	0	4.9	4.9	0	0	0	0	0	5.0	0	0	0	0	0	0	0	4.9	0	0	4.1

Ref No. IC7501

MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	0	5.0	0	0	0	0	4.9	0	0	0	0	0	4.9	0	5.0	4.9	0.6	2.3	4.7	3.2
PLAY	0	5.0	0	0	0	0	4.9	0	0	0	0	0	4.9	0	5.0	4.9	0.6	2.3	4.7	3.2
STOP	0	5.0	0	0	0	0	4.9	0	0	0	0	0	4.9	0	4.9	2.5	2.1	0.3	4.7	0

Ref No. IC7501

MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116
REC	4.9	5.0	0	5.0	5.0	5.0	5.0	5.0	5.0	1.3	0	5.0	2.0	0	0	0.5
PLAY	4.9	5.0	0	5.0	5.0	5.0	5.0	5.0	5.0	1.3	0	5.0	2.0	0	0	0.5
STOP	5.0	5.0	0	5.0	5.0	5.0	5.0	5.0	5.0	1.3	0	5.0	2.0	0	0	1.0

Ref No. IC7502 / IC7503

MODE	1	2	3	4	5		1	2	3	4	5	6	7	8
REC	0	0	0	5.0	5.0		0	0	0	0	4.6	4.8	4.9	5.0
PLAY	0	0	0	5.0	5.0		0	0	0	0	4.6	4.8	4.9	5.0
STOP	0	0	0	5.0	5.0		0	0	0	0	4.6	4.7	4.9	5.0

Ref No. IC7504

MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	4.9	0	4.4	2.5	0	2.2	2.2	5.0	-27.8	-25.8	-25.7	-26.5	-25.6	-25.1	-24.7	-27.8	-24.7	5.0	-24.7	-21.6
PLAY	4.9	0	4.4	2.5	0	2.2	2.2	5.0	-27.8	-25.8	-25.7	-26.5	-25.6	-25.1	-24.7	-27.8	-24.7	5.0	-24.7	-21.6
STOP	4.9	0	4.4	0.8	0	2.2	2.2	5.0	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-18.0	5.0	-15.5	-18.0

Ref No. IC7504

MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	-18.5	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-21.5	-21.5	-18.4	-21.6	-21.6	-13.3	-15.6	-9.8	-18.5	-21.6	-18.5	-11.7	-21.3
PLAY	-18.5	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-21.5	-21.5	-18.4	-21.6	-21.6	-13.3	-15.6	-9.8	-18.5	-21.6	-18.5	-11.7	-21.3
STOP	-13.0	-18.0	-15.5	-18.2	-18.4	-18.0	-18.1	-18.1	-10.5	-13.4	-18.5	-16.5	-15.1	-16.0	-3.9	-17.8	-10.1	-12.2	-12.2	-14.2

Ref No. IC7504

MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	-21.6	-21.7	-21.9	-22.4	-19.3	-13.6	-16.2	-21.9	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-24.7	-24.7	-24.7	-24.7	-24.7
PLAY	-21.6	-21.7	-21.9	-22.4	-19.3	-13.6	-16.2	-21.9	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-27.8	-24.7	-24.7	-24.7	-24.7	-24.7
STOP	-16.5	-17.2	-17.2	-16.6	-14.2	-14.3	-14.7	-27.8	-27.8	-27.3	-27.8	-27.0	-26.5	-26.5	-26.5	-25.0	-23.6	-24.5	-23.6	-23.0

Ref No. IC7504

MODE	61	62	63	64
REC	-24.7	-24.7	-24.7	-28.0
PLAY	-24.7	-24.7	-24.7	-28.0
STOP	-22.5	-22.5	-22.4	-28.0

Ref No. IC7505 / IC7506 / IC7507

MODE	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	6	7	8
REC	4.1	5.2	0	0	0		2.2	3.3	0	0	0		5.7	1.3	1.3	0	0.2	0.3	11.2	12.3
PLAY	4.1	5.2	0	0	0		2.2	3.3	0	0	0		5.7	1.3	1.3	0	0.2	0.3	11.2	12.3
STOP	4.1	5.2	0	0	0		2.2	3.3	0	0	0		5.7	1.3	1.3	0	0.3	0.2	11.2	12.3

Ref No.	Q4004				Q4006				Q4007				Q4008				Q4009		
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B
REC	5.2	-0.9	5.2		0	0	-0.1		0	0	-0.1		0	0	-0.2		0	0	-0.2
PLAY	5.2	-0.9	5.2		0	0	-0.1		0	0	-0.1		0	0	-0.2		0	0	-0.2
STOP	5.2	-0.4	5.2		0	0	-0.1		0	0	-0.1		0	0	0.4		0	0	0

Ref No.	Q7401				Q7501				Q7502				Q7503				Q7504		
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B
REC	0	11.6	0		2.7	0	2.1		2.0	5.0	1.6		2.7	0	2.1		2.0	5.0	1.6
PLAY	0	11.6	0		2.7	0	2.1		2.0	5.0	1.6		2.7	0	2.1		2.0	5.0	1.6
STOP	0.1	11.6	0		2.7	0	2.1		2.0	5.0	1.6		2.7	0	2.1		2.0	5.0	1.6

Ref No.	Q7506				Q7507				Q7508				Q7510				Q7511		
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B
REC	0	5.0	0		0	0	4.6		0	4.6	0		0	29.3	0		5.1	12.3	5.5
PLAY	0	5.0	0		0	0	4.6		0	4.6	0		0	29.3	0		5.1	12.3	5.5
STOP	0	5.0	0		0	0	5.1		0	5.1	0.1		0	29.1	0		5.1	12.3	5.6

Ref No.	QR4002				QR4003				QR4004				QR4005				QR7401		
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B
REC	0	0	4.9		0	0	2.4		0	5.2	0		0	5.2	0		0	4.2	0
PLAY	0	0	4.9		0	0	2.4		0	5.2	0		0	5.2	0		0	4.2	0
STOP	0	0	4.9		0	0	2.4		0	5.2	0		0	5.2	0		0	4.2	0

Ref No.	QR7403				QR7404				QR7503				QR7506				QR7507		
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B
REC	0	0	4.9		0	0	0		0	3.3	0		0	0	2.2		0	0	4.1
PLAY	0	0	4.9		0	0	0		0	3.3	0		0	0	2.2		0	0	4.1
STOP	0	0	4.9		0	0	0		0	3.3	0		0	0	2.2		0	0	4.1

Ref No.	QR7508		
MODE	E	C	B
REC	0	0.1	0
PLAY	0	0.1	0
STOP	0	0.1	0

15.3. Tuner P.C.B.

Ref No.	Q7802		
MODE	E	C	B
REC	3.8	1.2	3.1
PLAY	3.8	1.2	3.1
STOP	3.8	1.2	3.1

15.4. Nicam Decoder P.C.B.

Ref No.	IC7301																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	2.5	2.5	5.0	0	0	4.9	0	0	0	0.2	0	0.1	0	1.6	1.5	0	0	2.0	0	0
PLAY	2.5	2.5	5.0	0	0	4.9	0	0	0	0.3	0	0.3	0	1.6	1.5	0	0	2.0	0	0
STOP	2.5	2.5	5.0	0	0	4.9	0	0	0	0.3	0	0.2	0	1.6	1.5	0	0	2.0	0	0

Ref No.	IC7301																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.3	0	2.0	2.0	2.0	4.9	0	5.0	4.5	4.2	0.3	0.2	0.2	0.2	5.0	0	4.9	2.5	2.5	2.5
PLAY	3.3	0	2.0	2.0	2.0	4.9	0	5.0	4.5	4.2	0.3	0	0.2	0.2	5.0	0	4.9	2.5	2.5	2.5
STOP	3.3	0	2.0	2.0	2.0	4.9	0	5.0	4.5	4.2	0.3	0.3	0.3	0.2	5.0	0	4.9	2.5	2.5	2.5

Ref No.	IC7301			
MODE	41	42	43	44
REC	2.5	4.9	2.5	0
PLAY	2.5	4.9	2.5	0
STOP	2.5	4.9	2.5	0

Ref No.	IC7302		
MODE	1	2	3
REC	5.0	0	4.9
PLAY	5.0	0	4.9
STOP	5.0	0	4.9
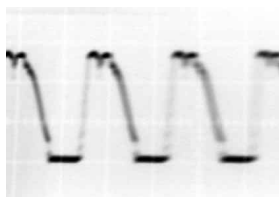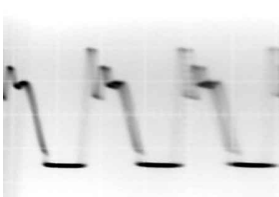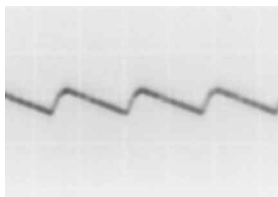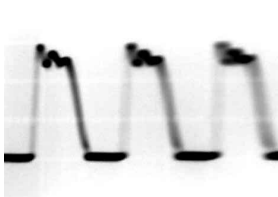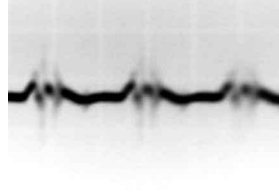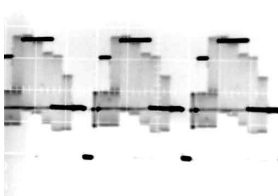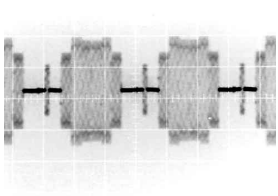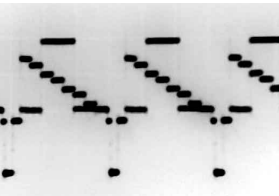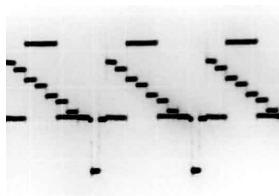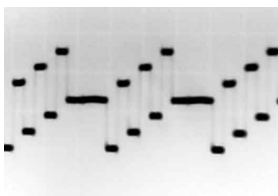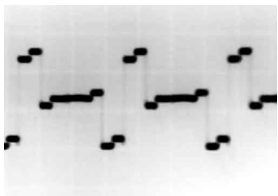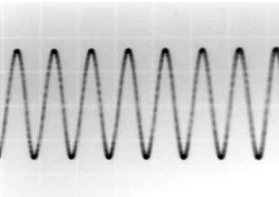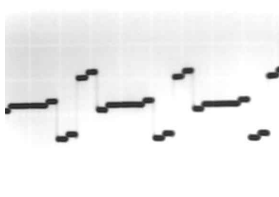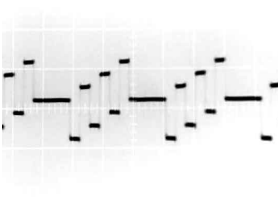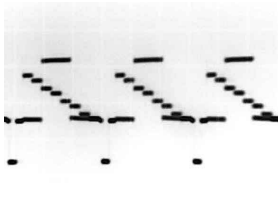
15.5. LED P.C.B.

Ref No.	Q7101				Q7102				Q7103				Q7104							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
REC	0	3.7	0		0	0.1	0.7		0	5.2	0		0	0	0.7					
PLAY	0	3.7	0		0	0.1	0.7		0	5.2	0		0	0	0.7					
STOP	0	3.7	0		0	0.1	0.7		0	5.2	0		0	0	0.7					

15.6. P9001 Connector

Ref No.	P9001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	-	-	-	1.0	-	3.3	3.3	3.3	0.2	3.1	-	3.3	-	3.3	2.3	-	5.1	-	-	-
PLAY	-	-	-	1.0	-	3.3	3.3	3.3	0.2	3.1	-	3.3	-	3.3	2.3	-	5.1	-	-	-
STOP	-	-	-	1.0	-	3.3	3.3	3.2	0.2	3.1	-	3.2	-	3.3	2.3	-	5.1	-	-	-
Ref No.	P9001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	-	-	-	-	0	-	0	-	2.5	-	2.5	-	0	0	0	1.7	0	3.3	2.5	-
PLAY	-	-	-	-	0	-	0	-	2.5	-	2.5	-	0	0	0	1.7	0	3.3	2.5	-
STOP	-	-	-	-	0	-	0	-	2.5	-	2.5	-	0	0	0	1.7	0	3.3	2.5	-
Ref No.	P9001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.5	3.3	0	0	0	0	1.1	5.0	0	-	1.5	5.0	0	-	1.0	3.7	0	3.7	1.1	5.7
PLAY	2.5	3.3	0	0	0	0	1.1	5.0	0	-	1.5	5.0	0	-	1.0	3.7	0	3.7	1.1	5.7
STOP	2.5	3.3	0	0	0	0	1.1	5.0	0	-	1.5	5.0	0	-	1.0	3.7	0	3.7	1.1	5.7
Ref No.	P9001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	5.7	1.0	5.7	0	0	0	3.3	0	3.3	0	3.3	0	3.3	0	1.5	0	0.3	0	-
PLAY	0	5.7	1.0	5.7	0	0	0	3.3	0	3.3	0	3.3	0	3.3	0	1.5	0	0.3	0	-
STOP	0	5.7	1.0	5.7	0	0	0	3.3	0	3.3	0	3.3	0	3.3	0	1.5	0	0.3	0	-
Ref No.	P9001																			
MODE	81	82	83	84	85	86	87	88												
REC	0	1.5	1.5	1.5	0	1.5	2.1	1.5												
PLAY	0	1.5	1.5	1.5	0	1.5	2.1	1.5												
STOP	0	1.5	1.5	1.5	0	1.5	2.1	1.5												

15.7. Waveform Chart

T1150-3 STOP 30Vp-p (5 μ sec.div)	T1150-5 STOP 560Vp-p (5 μ sec.div)	T1150-7 STOP 8Vp-p (5m sec.div)	T1150-15,18 STOP 30Vp-p (5 μ sec.div)
IC1150-1 STOP 8.0Vp-p (5 μ sec.div)	IC1150-2 STOP 0.5Vp-p (5 μ sec.div)	P7402-83 REC/PLAY 1.0Vp-p (20 μ sec.div)	P7402-51 REC/PLAY 0.7Vp-p (20 μ sec.div)
P7402-47 REC/PLAY 1.0Vp-p (20 μ sec.div)	P7402-59 REC/PLAY 1.0Vp-p (20 μ sec.div)	P7402-63 REC/PLAY 0.6Vp-p (20 μ sec.div)	P7402-55 REC/PLAY 0.6Vp-p (20 μ sec.div)
P7402-29,31 REC/PLAY 0.8Vp-p (1m sec.div)	JK3903-2 REC/PLAY 1.1Vp-p (20 μ sec.div)	JK3903-3 REC/PLAY 1.1Vp-p (20 μ sec.div)	JK3903-4 REC/PLAY 2.0Vp-p (20 μ sec.div)

16 Abbreviations

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMP OUTPUT
	ASYNC	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSCK	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
	STVALID	STREAM DATA VALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLY VOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER
X	X	X´ TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X´ TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X´ TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

17 Block Diagram

17.1. Power Supply Block Diagram

DMR-EH60EE/GC/GCS/GN
Power Supply Block Diagram

MAIN P.C.B.

DIGITAL P.C.B.

DMR-EH60EE/GC/GCS/GN
Power Supply Block Diagram
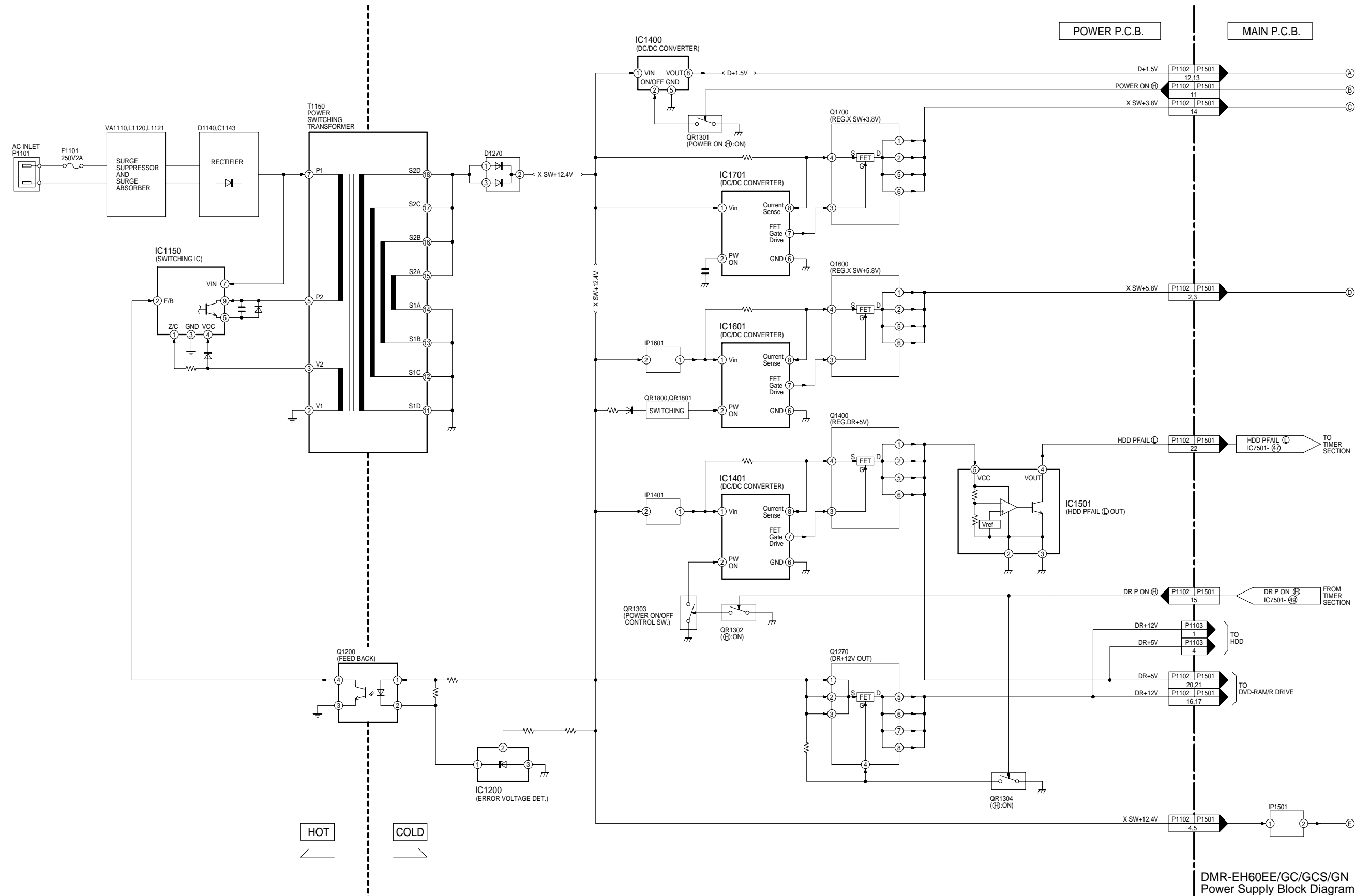
DMR-EH60EE/GC/GCS/GN
Power Supply Block Diagram

17.2. Analog Video Block Diagram
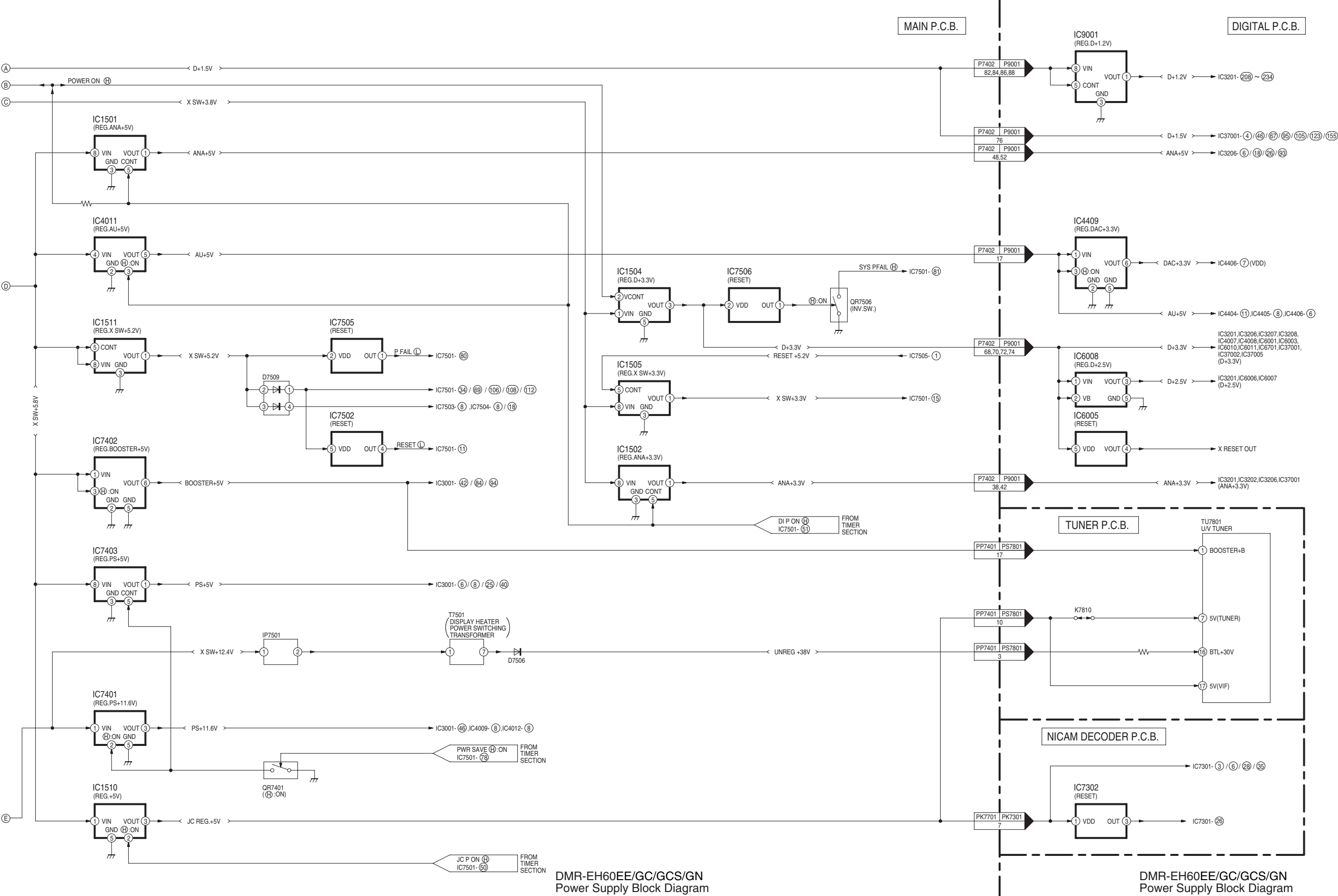
DMR-EH60EE/GC/GCS/GN
Analog Video Block Diagram
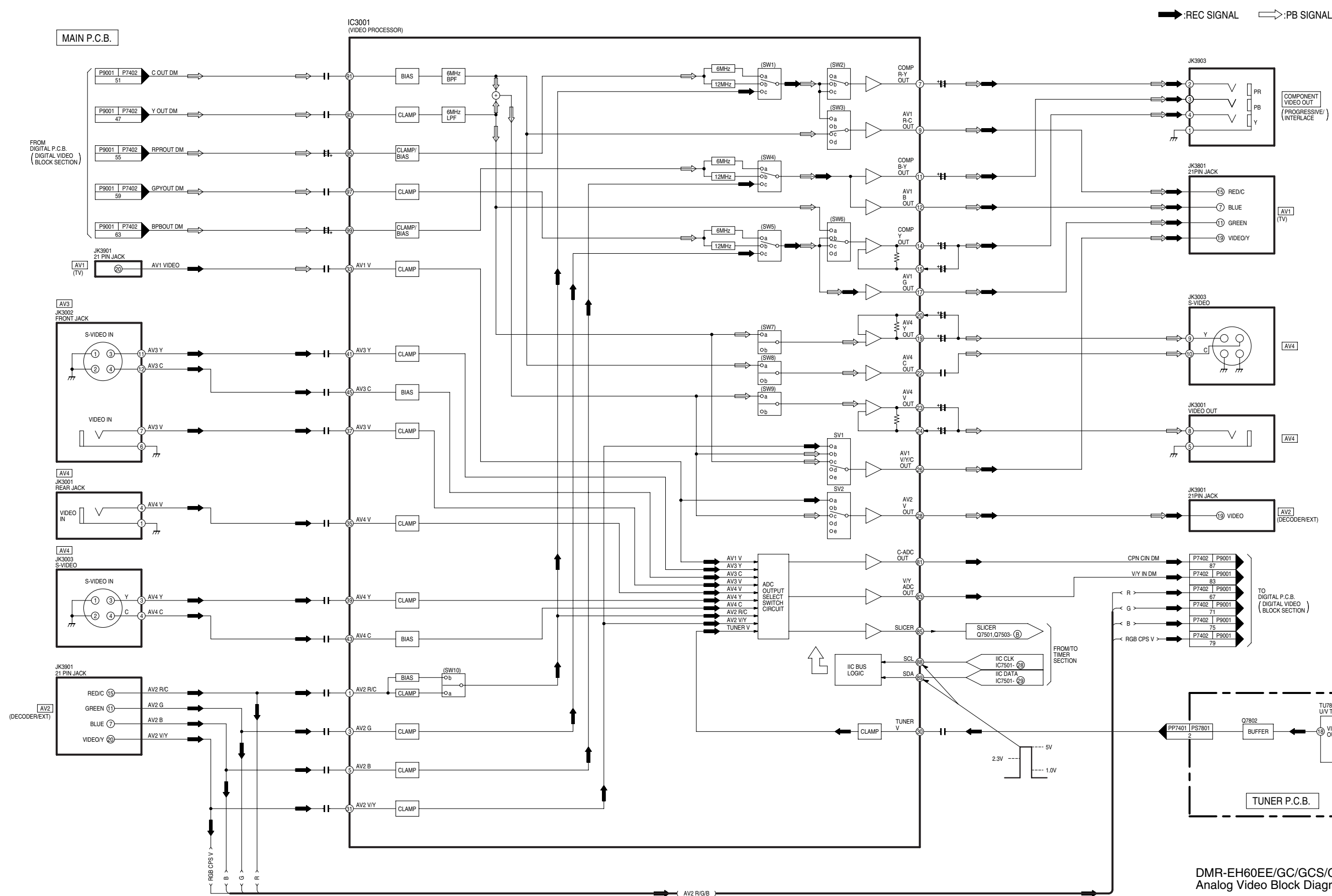
17.3. Analog Audio Block Diagram
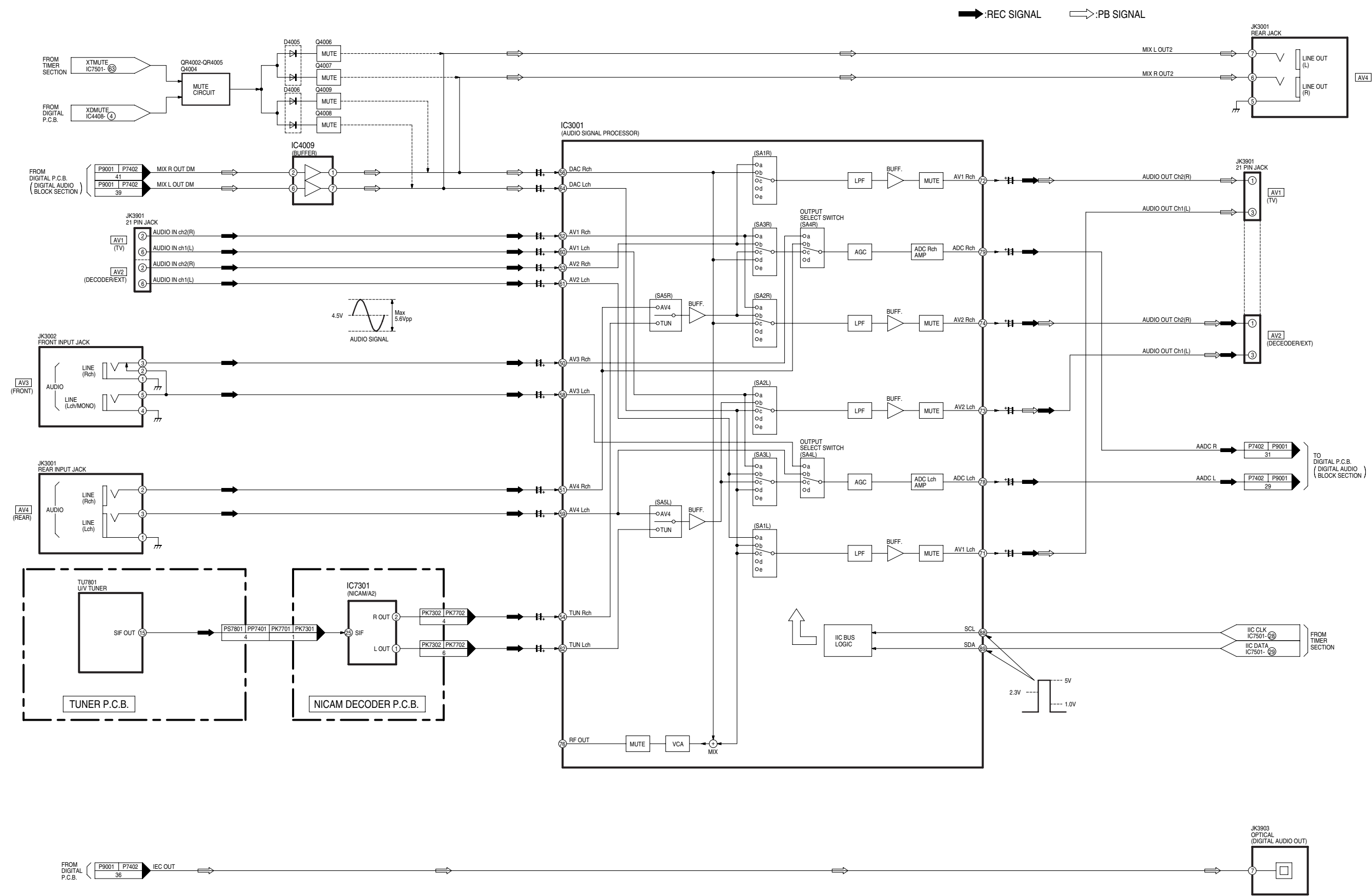
DMR-EH60EE/GC/GCS/GN
Analog Audio Block Diagram

17.4. Timer Block Diagram

DMR-EH60EE/GC/GCS/GN
Timer Block Diagram

18 Schematic Diagram

18.1. Interconnection Schematic Diagram

POWER (Ø/I) — FRONT(L) P.C.B.

POWER P.C.B.

LED P.C.B.

SD CARD P.C.B.

FAN MOTOR

MAIN P.C.B.

TUNER P.C.B. — TU7801 U/V TUNER

NICAM DECODER P.C.B.

DIGITAL P.C.B.

DVD RAM DRIVE

HDD

DMR-EH60EE/GC/GCS/GN
Interconnection
Schematic Diagram

P.C.B.Name	Circuit Name	Ref.No.
Main P.C.B.	Main Net	Ref.No.1500,7400 SERIES
	A/V I/O	Ref.No.3000,3900,4000,4900 SERIES
	Timer	Ref.No.7500,7600 SERIES

P.C.B.Name	Circuit Name	Ref.No.
Digital P.C.B.	Audio Net	Ref.No.4400,9000 SERIES
	AVENC/RTSC/AVDEC/MAIN CPU-1	Ref.No.3200,3300 SERIES
	AVENC/RTSC/AVDEC/MAIN CPU-2	Ref.No.6000,6100,6200 SERIES
	DV1394/GLUE	Ref.No.6700,37000 SERIES

18.2. Power Supply Schematic Diagram

P1101
K2AA2H000007
AC INLET

ZA1103
EYF52BCY

ZA1104
EYF52BCY

F1101
250V T2AL

VA1110
ERZVA5V471

C1120 0.022

L1120
G0B233D00001

C1122
1000P

C1123
1000P

C1121
0.068

L1121
G0B233D00001

D1140
B0EDKT000009
(RECTIFIER)

C1143
400V68

C1125
1000P

T1150
ETS29AZ2G6AC
(POWER SWITCHING TRANSFORMER)

PT
P1
PU
P2
NC
V2
V1

NC 10
S1D
S1C
S1B
S1A
S2A
S2B
S2C
S2D

D1270
B0JBSG000010

ZA1270:VSC5604
ZA1271:XYN3+F8FJ

R1153
18

R1150
18

D1151
B0HAGM000006

C1150
35V68

IC1150
C0DACZH00017
(SWITCHING IC)

ZA1150:VSC5603
ZA1151:XYN3+F8FJ

F/B   VCC   Vin

Z/C   GND   OCL   Collector

C1151
1000P

D1157
B0HADV000001

R1158
0.22

C1270
16V1800

C1271
16V1800

X SW+12.4V

ZA1105
K9ZZ00001279

ZA1106
K9ZZ00001279

R1152
10K

R1151
6800

C1152
330P

Q1200
B3PBA0000237
(FEED BACK)

R1207 10K

C1201 0.047

R1208
2200

R1209
1K

IC1200
C0DAEMB00003
(ERROR VOLTAGE DET.)

D1156
MA2C165001VT

R1157
510

R1154
9100

D1152
MAZ4100NMF

R1210
1K

C1200
0.1

R1201
8200

R1200
1200

D1155
MAZ73000BC

R1155
470

C1154
1000P

C1153
2200P

R1156
16K

R1205
220K

R1206
2400

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS
FOR SAFETY.WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

HOT   COLD

DMR-EH60EE/GC/GCS/GN
Power Supply
Schematic Diagram

DMR-EH60EE/GC/GCS/GN
Power Supply
Schematic Diagram

DMR-EH60EE/GC/GCS/GN
Power Supply
Schematic Diagram

18.3. Main Net Section (Main P.C.B. (1/3)) Schematic Diagram (M)

DMR-EH60EE/GC/GCS/GN
Main Net Section (Main P.C.B.(1/3))
Schematic Diagram(M)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS
FOR SAFETY.WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

A

M:Main Net Section(Page: A)
AV:A/V I/O Section(Page: B)
T:Timer Section(Page: C)

C1538 1
C7406 1

Vin 8 7 6 5 CONT
BIAS
DRIVER TERMINAL SHUTDOWN
CURRENT LIMITTER
REFERENCE
Vout 1 2 3 GND 4
IC1511 C0CBCDD00008 (REG.X SW+5.2V)

C1540 0.01

Vin 8 7 6 5 CONT
BIAS
DRIVER TERMINAL SHUTDOWN
CURRENT LIMITTER
REFERENCE
Vout 1 2 3 GND 4
IC7403 C0CBCDD00006 (REG.PS+5.2V)

C7402 470P
C7404 1

C1539 1

AFC
G IIC DATA A
G IIC CLK A
SW2
G CPS VOUT A

TO PS7801
Tuner P.C.B.
PP7401
18 GND
17 BOOSTER5V
16
15
14 GND
13
12
11 GND
10 JCREG5V
9
8 IIC CLK
7 IIC DATA
6 AFC
5
4 SIF OUT
3 UNREG38V
2 TUNER VIDEO IN
1 DGND

PS 5V
X SW 5.2V
BOOSTER+5V

C7403 6V47
C7405 0.1

VOUT GND NR
IC
VIN GND NC
IC7402 C0DBCHD00004 (REG.BOOSTER+5V)

IC1510 C0CBCDG00006 (REG.+5V)
Vin 1 +:ON 2 Vout 3 NC 4 GND 5

R7422 100   R7421 100

L7403 2.2u   R7401 0

TO
Nicam Decoder P.C.B.

TO PK7301
PK7701
1 SIF
2 GND
3 TUN AUDIO IN
4
5
6
7 JC REG.5V

LB7406 J0JHC0000032

C7408 0.1   C7427 2200P   C7416 25V47

TO PK7302
PK7702
1 SCL
2 SDA
3
4 DECODER AUDIO(R)
5 GND
6 DECODER AUDIO(L)

C1535 1   C1536 10

X SW 5.8V

JC REG.+5V   JC REG.+5V

JC REG.5V
JC P ON

REG.PS+11.6V   REG.PS+11.6V   PS 11.6V

X SW+3.8V

C1511 1   R1505 270

LB7401 J0JGC0000020

G TUNER L A
G TUNER R A
G TU VIDEO A
UNREG 38V

ZJ7402 K9ZZ00001279
ZJ7404 K9ZZ00001279

Vin 8 7 6 5 CONT
BIAS
DRIVER TERMINAL SHUTDOWN
CURRENT LIMITTER
REFERENCE
Vout 1 2 3 GND 4
IC1502 C0CBCBD00018 (REG.ANA+3.3V)

C1517 470P

C7407 0.1

AV2 PB ⊕ CONTROL

Q7401 2SD1819AWL
D7403 MA2C165001VT   R7405 470   R7404 22K
R7407 10K   R7406 470K   R7403 15K

AV2 8

Vin +:ON Vout Vadj.
IC
IC1504 C0CBCYH00003 (REG.D+3.3V)

R1506 10K

QR7403 UNR521500L
R7408 15K

AV2-8PIN
AV2 PB

C1515 10V47   R1507 1500   C1501 0.022

ANA+3.3V

R1508 15K

QR7404 UNR521500L

WIDE

C1512 1

C1506 10V47

D+3.3V

DMR-EH60EE/GC/GCS/GN
Main Net Section (Main P.C.B.(1/3))
Schematic Diagram(M)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

DMR-EH60EE/GC/GCS/GN
Main Net Section (Main P.C.B.(1/3))
Schematic Diagram(M)

12	13	14	15	16	17	18	19	20	21	22

18.4. A/V I/O Section (Main P.C.B. (2/3)) Schematic Diagram (AI)

DMR-EH60EE/GC/GCS/GN
A/V I/O Section (Main P.C.B.(2/3))
Schematic Diagram(AV)

B

M:Main Net Section(Page: A)
AV:A/V I/O Section(Page: B)
T:Timer Section(Page: C)

IC3001
C1AB00002100
(A/V PROCESSOR)

DMR-EH60EE/GC/GCS/GN A/V I/O Section (Main P.C.B.(2/3)) Schematic Diagram(AV)

DMR-EH60EE/GC/GCS/GN
A/V I/O Section (Main P.C.B.(2/3))
Schematic Diagram(AV)

NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE
SLIGHTLY DIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

18.5. Timer Section (Main P.C.B. (3/3)) Schematic Diagram (T)

DMR-EH60EE/GC/GCS/GN
Timer Section (Main P.C.B.(3/3)) Schematic Diagram(T)

M:Main Net Section(Page: **A**)
AV:A/V I/O Section(Page: **B**)
T:Timer Section(Page: **C**)

DMR-EH60EE/GC/GCS/GN
Timer Section (Main P.C.B.(3/3)) Schematic Diagram(T)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

DMR-EH60EE/GC/GCS/GN
Timer Section (Main P.C.B.(3/3))
Schematic Diagram(T)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK △ HAVE THE SPECIAL CHARACTERISTICS
FOR SAFETY.WHEN REPLACING ANY OF THESE COMPONENTS.ONLY THE SAME TYPE.

M:Main Net Section(Page: A)
AV:A/V I/O Section(Page: B)
T:Timer Section(Page: C)

18.6. Tuner Pack Schematic Diagram

TU7801
ENGF7502GF

U/V TUNER

Pin	Signal
1	BOOSTER+B
2	AUDIO IN
3	MSDA
4	5V(RFC)
5	MSCL
6	VIDEO IN
7	5V(TUNER)
9	RFAGC
10	SW(V/IF)
11	SCL
12	SDA
13	AFC S-CURVE
14	AUDIO OUT
15	SIF OUT
16	BTL-30V/IN
17	5V(VIF)
18	VIDEO OUT

K7808 0

C7822 0.01
C7813 6V47
C7825 100P
R7818 220
R7815 470
C7818 33P

C7828 0.01

LB7803 J0JHC0000032

D7802 MAZ4300NMF

LB7804 J0JHC0000032

LB7802 J0JHC0000032

C7820 0.1
C7824 6V47

C7817 6V47

R7816 470

C7819 33P

C7821 0.01
C7814 50V22

C7809 0.01

K7810 0

TL7401

R7817 470

TO PP7401
MAIN P.C.B.
(MAIN NET SECTION)
PS7801

GND	18	
BOOSTER 5V	17	
	16	
	15	
GND	14	
	13	
	12	
GND	11	
JC REG 5V	10	REG.+5V
SW2	9	
IIC CLK	8	
IIC DATA	7	
AFC	6	
	5	
SIF OUT	4	
UNREG 38V	3	UNREG.+38V
TUNER VIDEO IN	2	
GND	1	

R7811 470

R7812 680

Q7802
2SB1218A0L
(VIDEO BUFFER)

R7820 1000

R7844 680

DMR-EH60EE/GC/GCS/GN
Tuner Pack
Schematic Diagram

18.7. Nicam Decoder Schematic Diagram

DMR-EH60EE/GC/GCS/GN
Nicam Decoder
Schematic Diagram

NOTE:
DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM
FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

18.8. SD Card Schematic Diagram

TO P6004
DIGITAL P.C.B.
(AV ENC/RTSC/AV DEC/
MAIN CPU-2 SECTION)
P6802

WP	1
3.3V	2
SBO0	3
DAT2	4
DAT0	5
XDIAG	6
COM	7
CLK	8
GND	9
DAT1	10
CD	11
DAT3	12
CMD	13
SBI0	14

CKF1 CKF4 CKF5 CKF8 CKF10 CKF11

CKF14 TL6804 CKF6 TL6806 CKF3 TL6801

CKF12
CKF13

TL6802 TL6803

LB6801
J0JHC0000032

LB6802
J0JHC0000045

R6801 100

R6804
22K

R6807
22K

R6805
12K

C6801
0.01

FL6801
F1H0J1050025

C6802
10

C6803
10

8 6 4 2
RX6802
12KX4
7 5 3 1

8 6 4 2
RX6801
22X4
7 5 3 1

R6802 22

R6803 22

TO SD CARD
P6803

1	DAT3
2	CMD
3	GND
4	3.3V
5	CLK
6	GND
7	DAT0
8	DAT1
9	DAT2
10	WP
11	CD
12	COM
13	FG

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

DMR-EH60EE/GC/GCS/GN
SD Card
Schematic Diagram

E   D   C   B   A

1   2   3   4   5   6   7

18.9. LED/DV JACK Schematic Diagram

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

DMR-EH60EE/GC/GCS/GN
LED/DV JACK Schematic Diagram

19 Print Circuit Board

19.1. Power P.C.B.

Power P.C.B.

Integrated Circuit		Connector		Coil		C1122	B-9	C1405	B-2	C1702	C-3	R1208	D-5	R1701	C-3
IC1150	C-7	P1101	E-8	L1120	C-8	C1123	C-9	C1406	D-4	C1703	C-3	R1209	D-5	R1702	C-2
IC1200	D-5	P1102	B-1	L1121	B-8	C1125	B-6	C1407	D-4	C1704	C-3	R1210	D-5	R1703	C-2
IC1400	B-3	P1103	C-1	L1270	C-4	C1143	B-6	C1408	D-4	C1705	C-3	R1270	D-3	R1704	C-3
IC1401	D-4	**Diode**		L1400	D-4	C1150	D-6	C1409	D-4	C1706	C-3	R1271	D-3	R1705	C-3
IC1501	D-2	D1140	B-7	L1401	B-2	C1151	C-6	C1410	C-6	C1707	C-2	R1311	E-5	R1800	B-5
IC1601	B-4	D1151	C-6	L1402	D-4	C1152	D-6	C1411	D-4	C1800	B-5	R1401	B-2	R1801	B-5
IC1701	C-3	D1152	C-6	L1503	D-2	C1153	D-6	C1412	D-6	**Resistor**		R1402	B-2	R1802	B-5
Transistor		D1155	D-6	L1601	B-4	C1154	D-7	C1413	D-3	R1150	C-6	R1404	B-2	R1803	B-5
Q1200	D-6	D1156	D-7	L1701	D-7	C1200	D-5	C1421	E-3	R1151	D-6	R1405	D-4	**Varistor**	
Q1270	D-3	D1270	C-5	LB1122	C-6	C1201	D-5	C1513	D-1	R1152	D-6	R1406	D-4	VA1110	C-8
Q1400	D-4	D1400	B-2	LB1123	C-7	C1270	C-4	C1514	D-2	R1153	C-6	R1407	D-4		
Q1600	B-4	D1401	D-3	LB1124	C-5	C1271	C-4	C1601	B-5	R1154	D-7	R1409	D-4		
Q1700	C-2	D1601	B-4	LB1400	D-4	C1272	D-2	C1602	B-5	R1155	D-7	R1410	B-2		
Transistor-resistor		D1701	C-2	LB1600	B-4	C1273	D-2	C1603	B-5	R1156	D-7	R1411	D-4		
QR1301	B-3	D1800	B-5	LB1700	B-5	C1274	B-5	C1604	B-5	R1157	D-7	R1518	D-2		
QR1302	E-4	**IC Protector**		**Fuse**		C1400	B-3	C1605	B-5	R1200	D-5	R1601	B-4		
QR1303	E-4	IP1401	D-4	F1101	D-8	C1401	B-3	C1606	B-3	R1201	D-5	R1602	B-5		
QR1304	D-3	IP1601	C-4	**Capacitor**		C1402	B-3	C1607	B-4	R1205	D-5	R1603	B-5		
QR1800	B-5	**Transformer**		C1120	D-8	C1403	B-3	C1608	B-4	R1206	D-5	R1604	B-4		
QR1801	B-5	T1150	C-6	C1121	B-8	C1404	B-3	C1701	C-3	R1207	D-5	R1605	B-4		

DMR-EH60EE/GC/GCS/GN
Power P.C.B.
(VEP01961A)

19.2. Main P.C.B.

19.2.1. Main P.C.B. (1/4 Section)
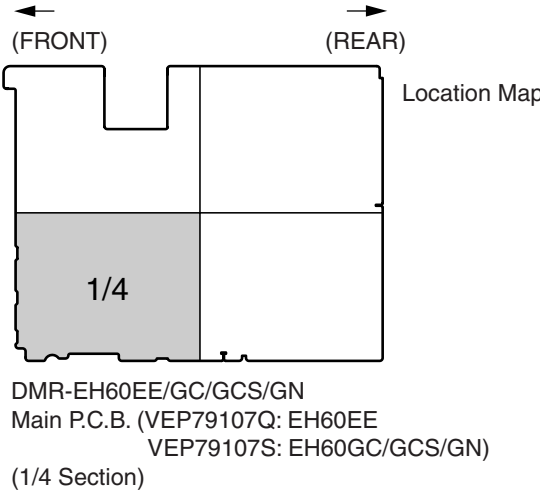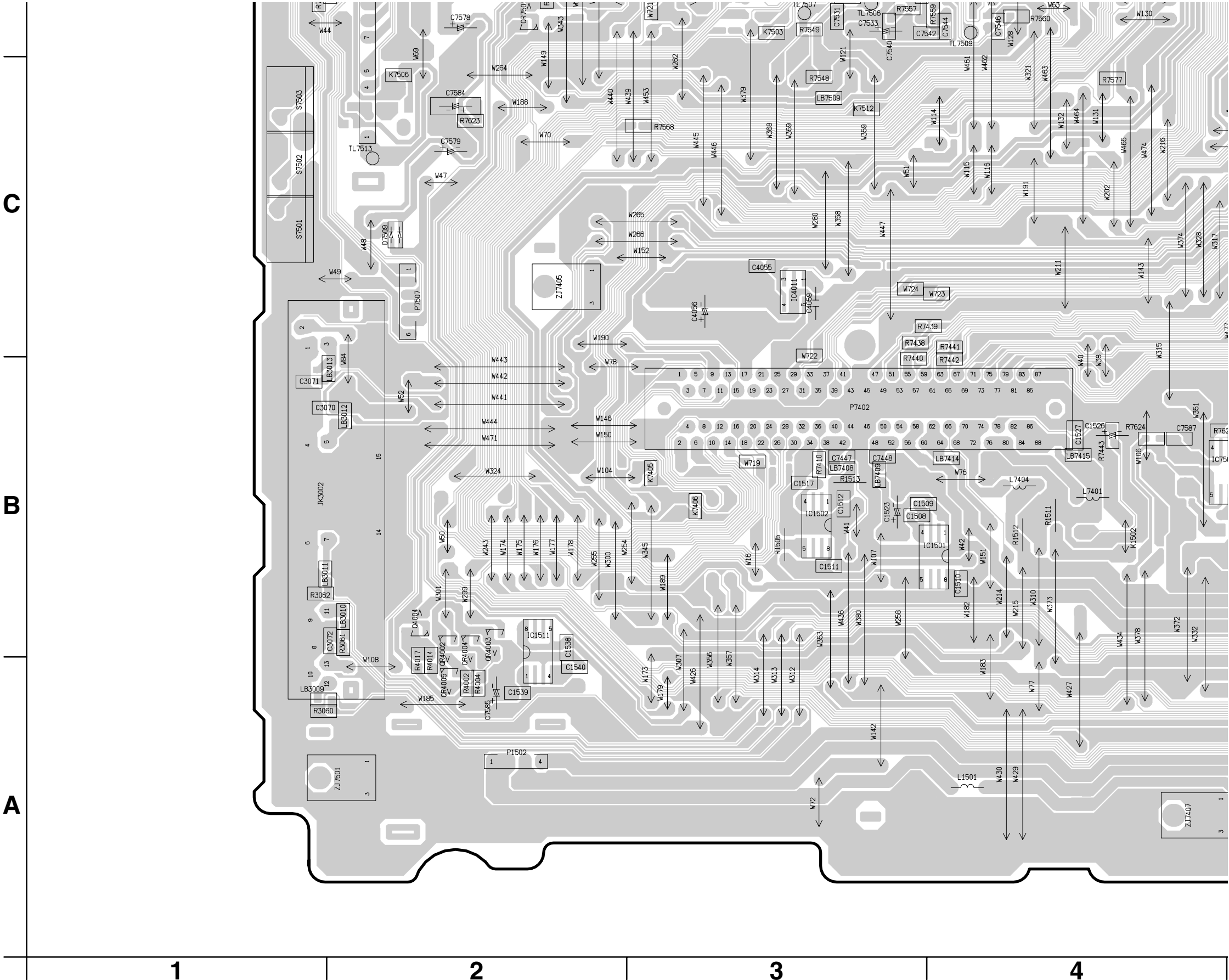
(FRONT)　　　(REAR)

Location Map

1/4

DMR-EH60EE/GC/GCS/GN
Main P.C.B. (VEP79107Q: EH60EE
　　　　　　　VEP79107S: EH60GC/GCS/GN)
(1/4 Section)

19.2.2. Main P.C.B. (2/4 Section)

(FRONT)　　　(REAR)

Location Map

2/4
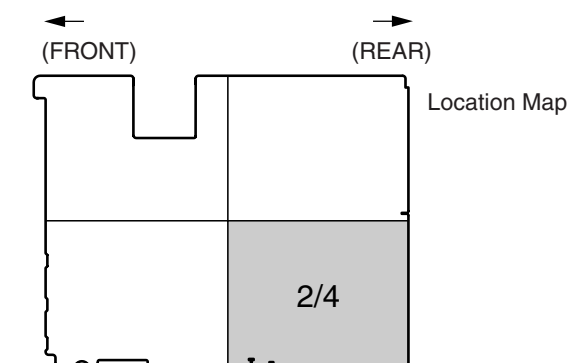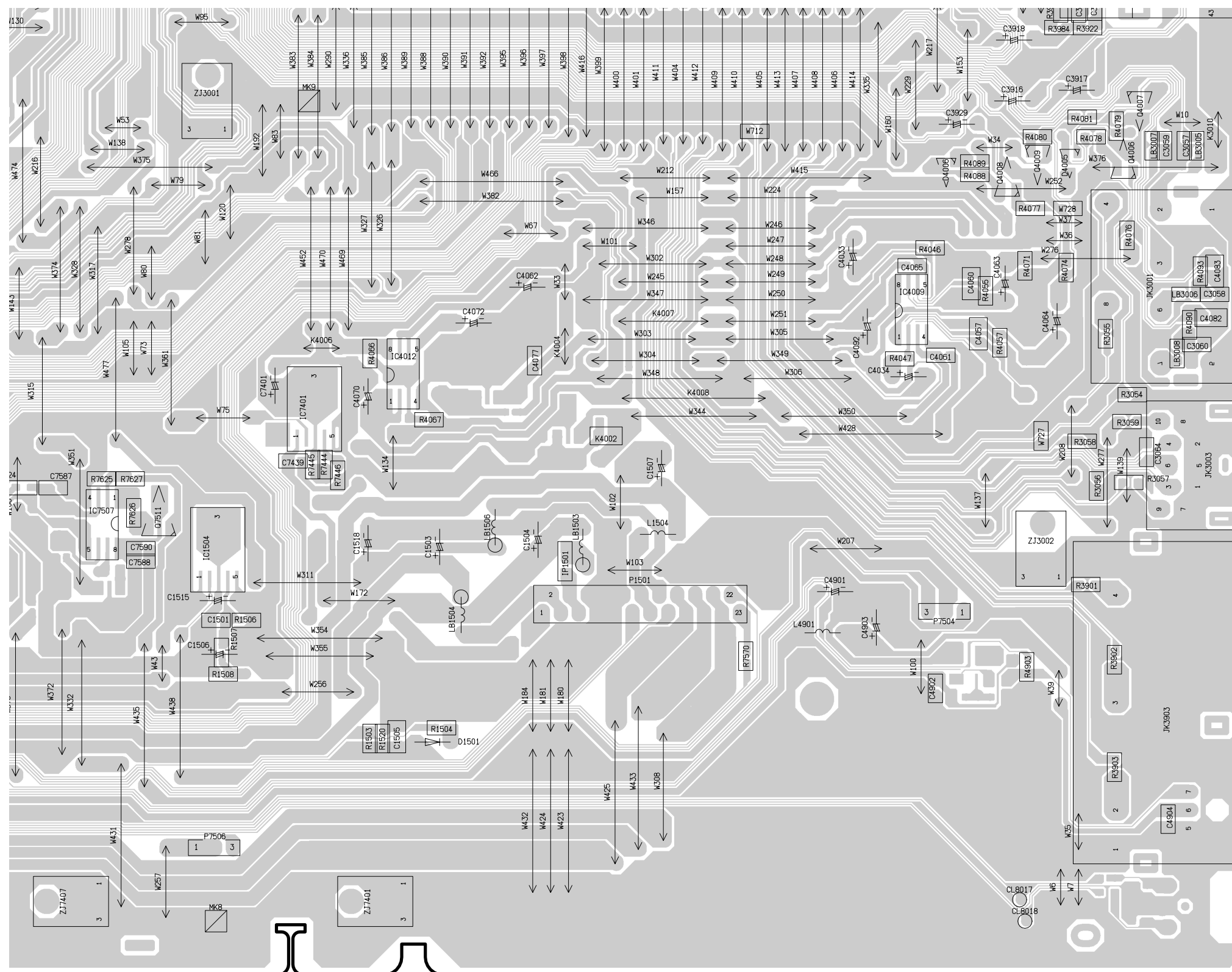
DMR-EH60EE/GC/GCS/GN
Main P.C.B. (VEP79107Q: EH60EE
　　　　　　　VEP79107S: EH60GC/GCS/GN)
(2/4 Section)

19.2.3. Main P.C.B. (3/4 Section)

(FRONT)　　　　(REAR)

Location Map

3/4

DMR-EH60EE/GC/GCS/GN
Main P.C.B. (VEP79107Q: EH60EE
　　　　　　　VEP79107S: EH60GC/GCS/GN)
(3/4 Section)

19.2.4. Main P.C.B. (4/4 Section)

(FRONT)　　　(REAR)

Location Map

4/4

DMR-EH60EE/GC/GCS/GN
Main P.C.B. (VEP79107Q: EH60EE
　　　　　　VEP79107S: EH60GC/GCS/GN)
(4/4 Section)

19.2.5. Main P.C.B. Address Information

Main P.C.B.

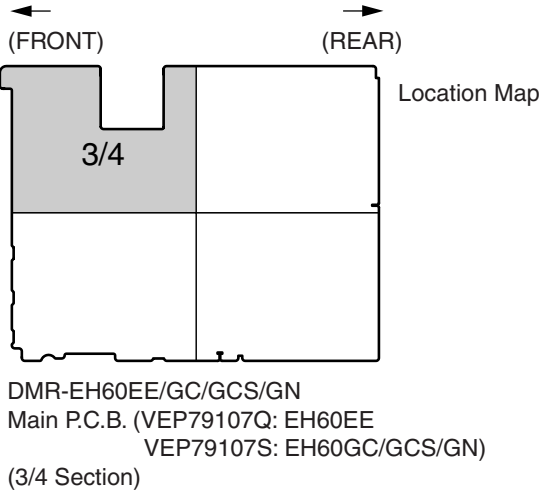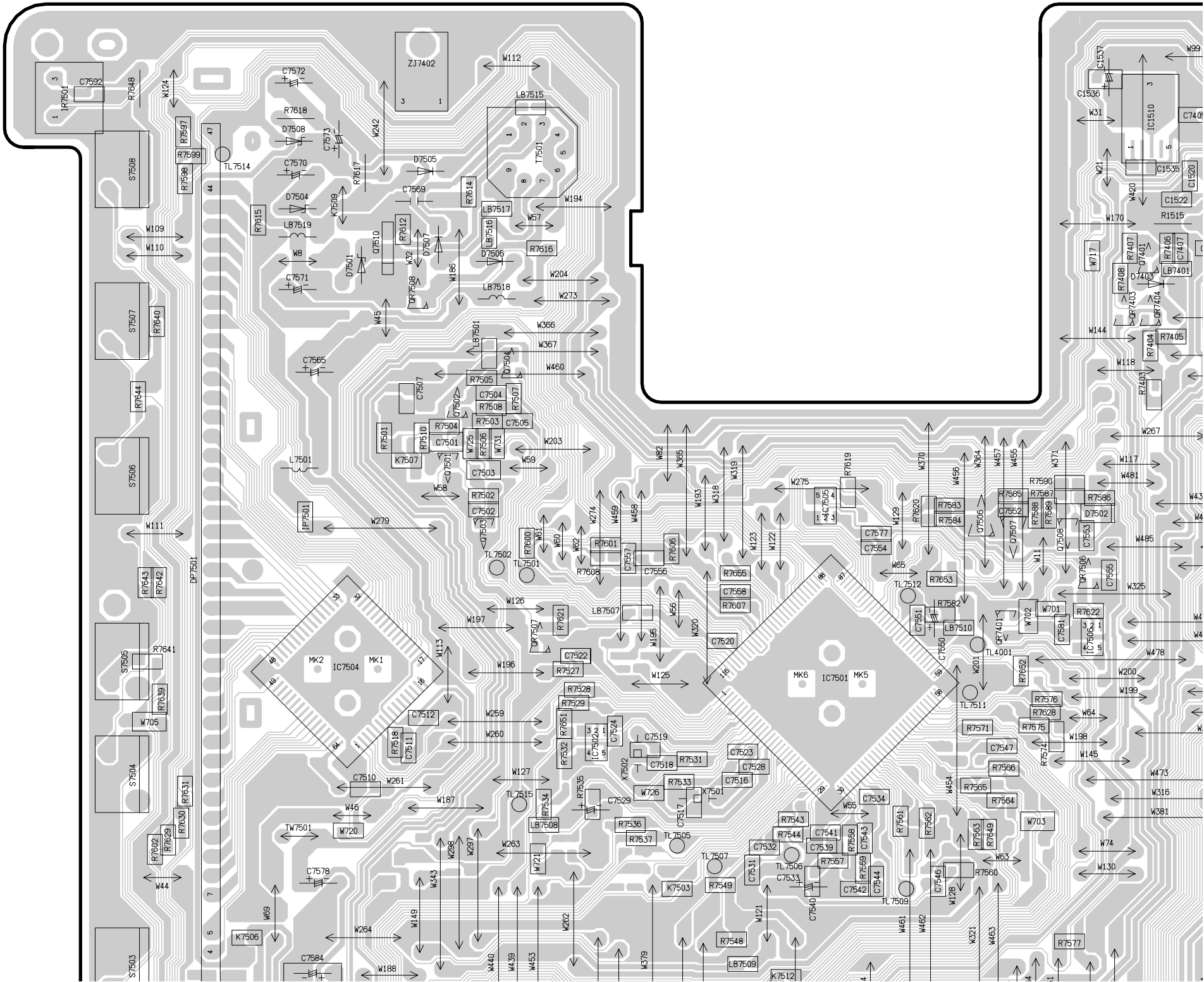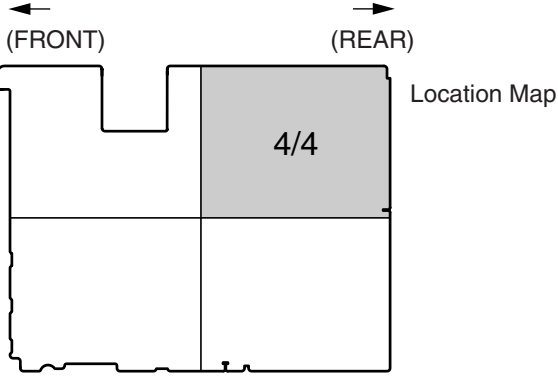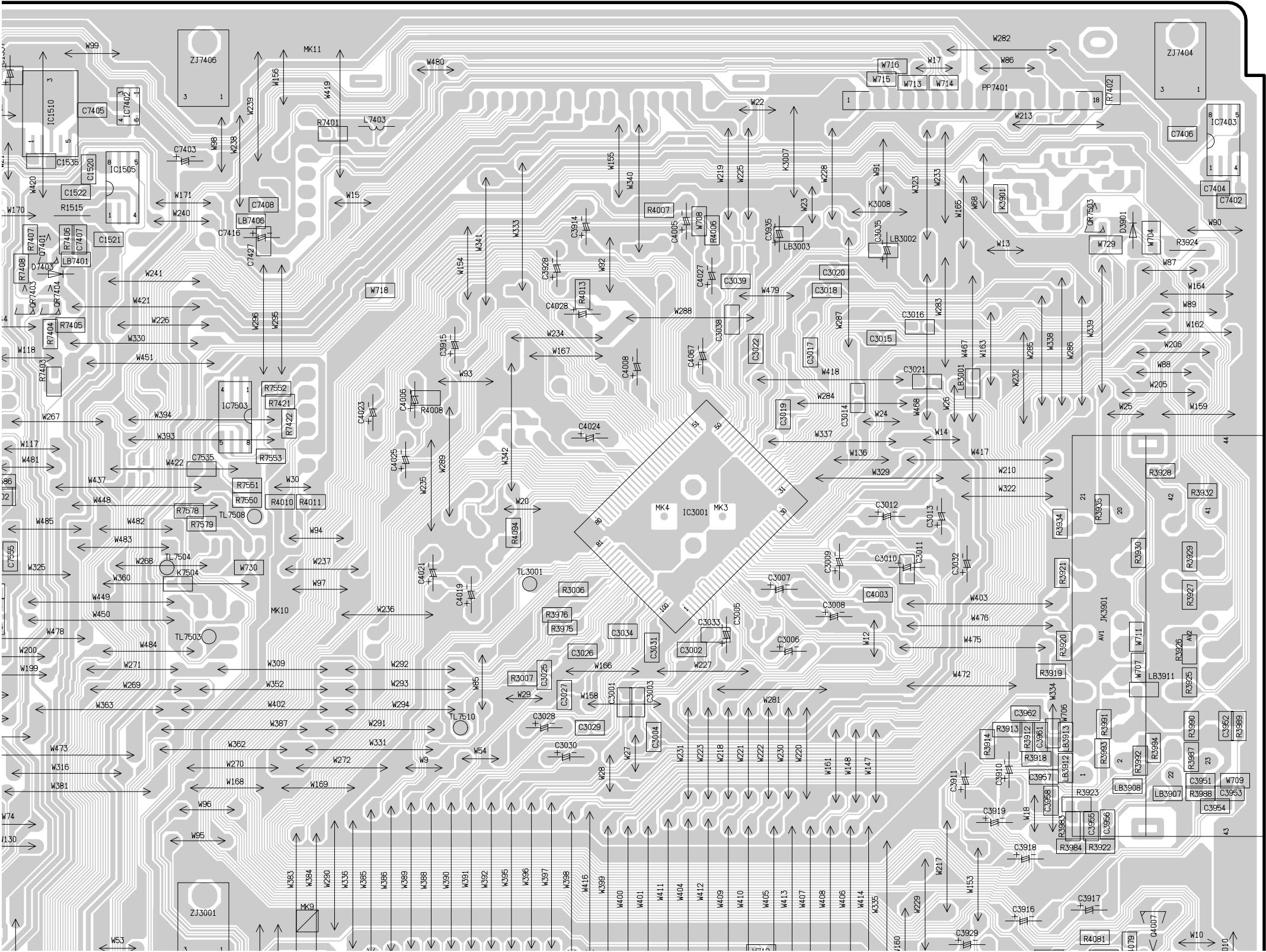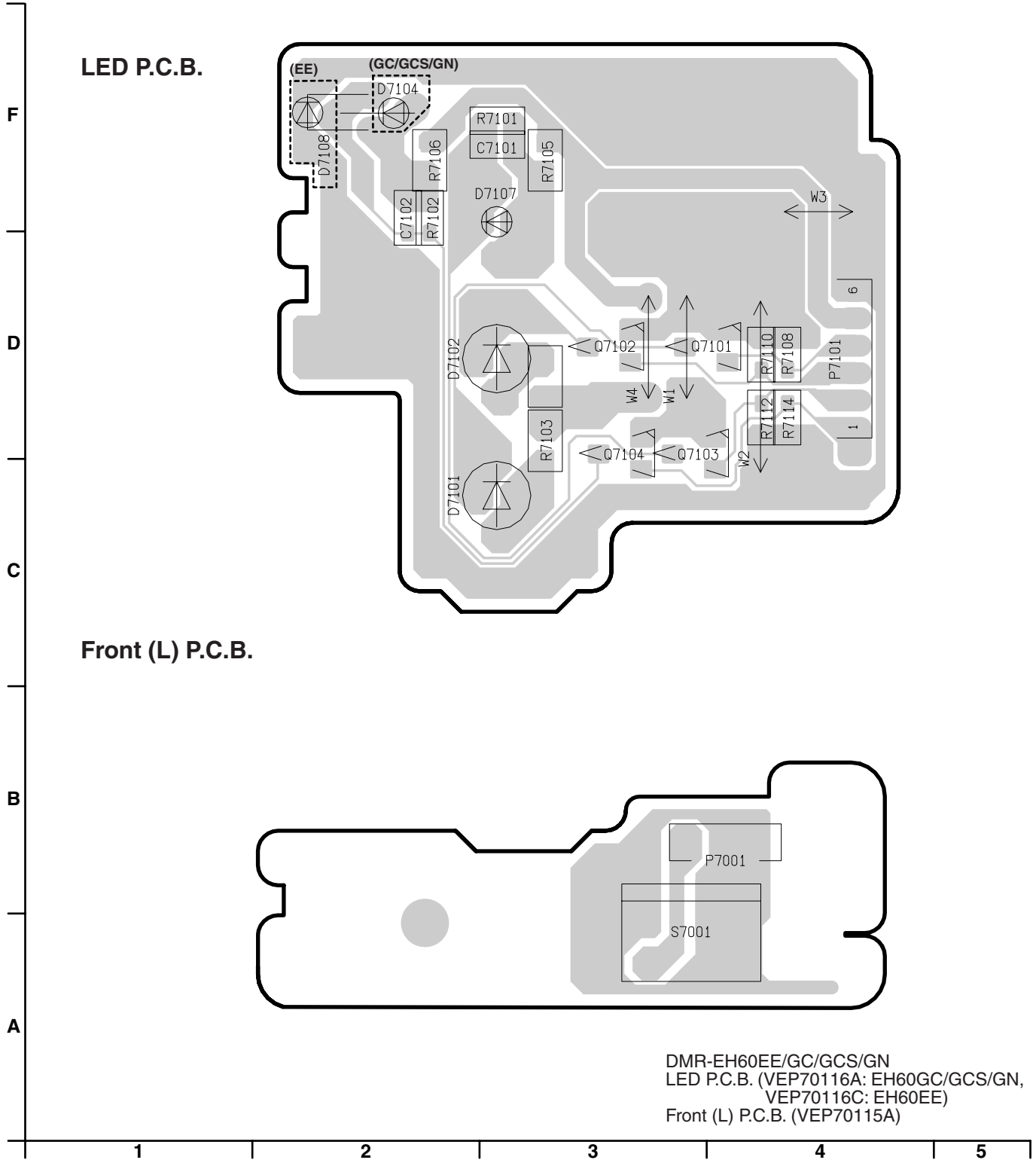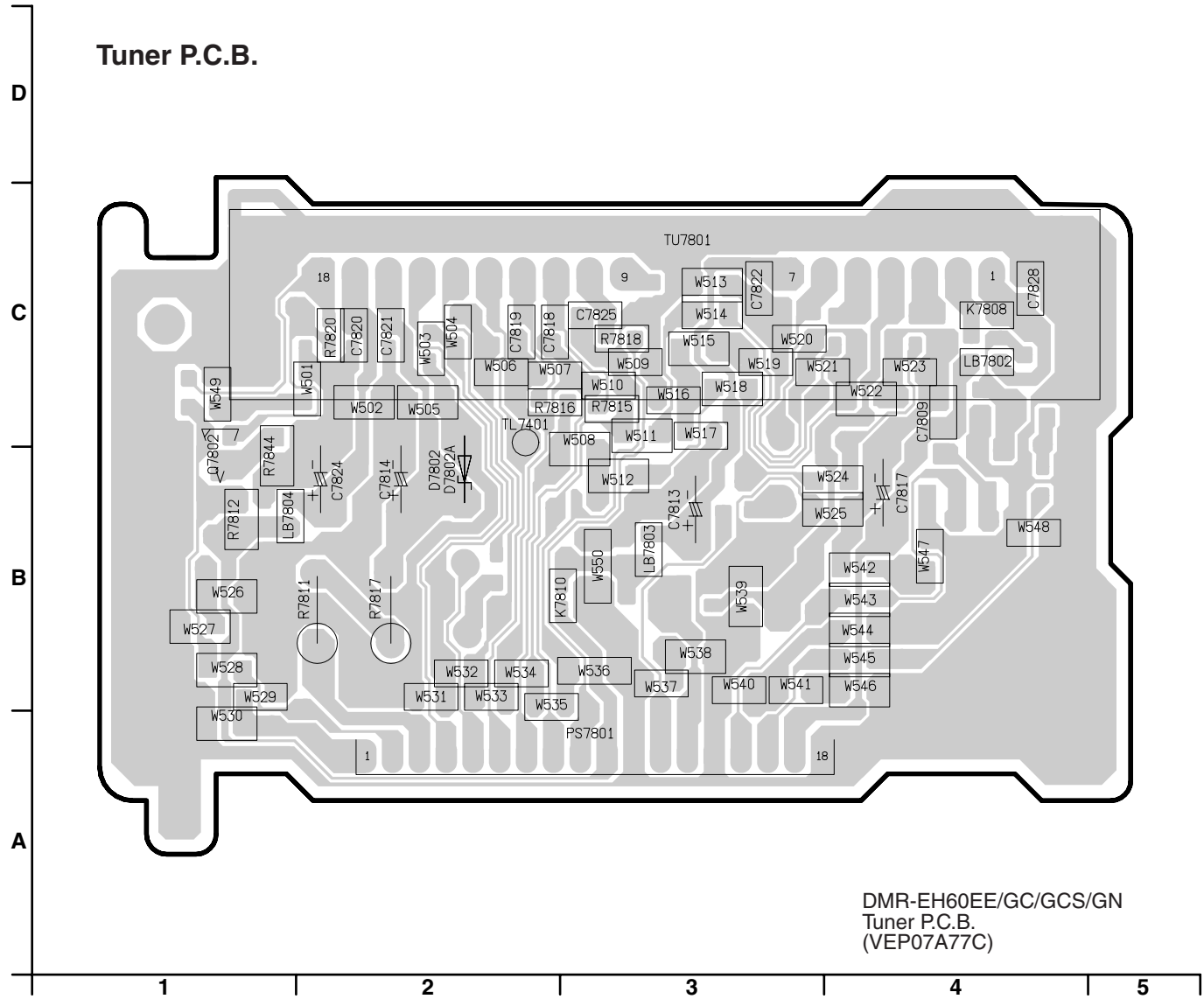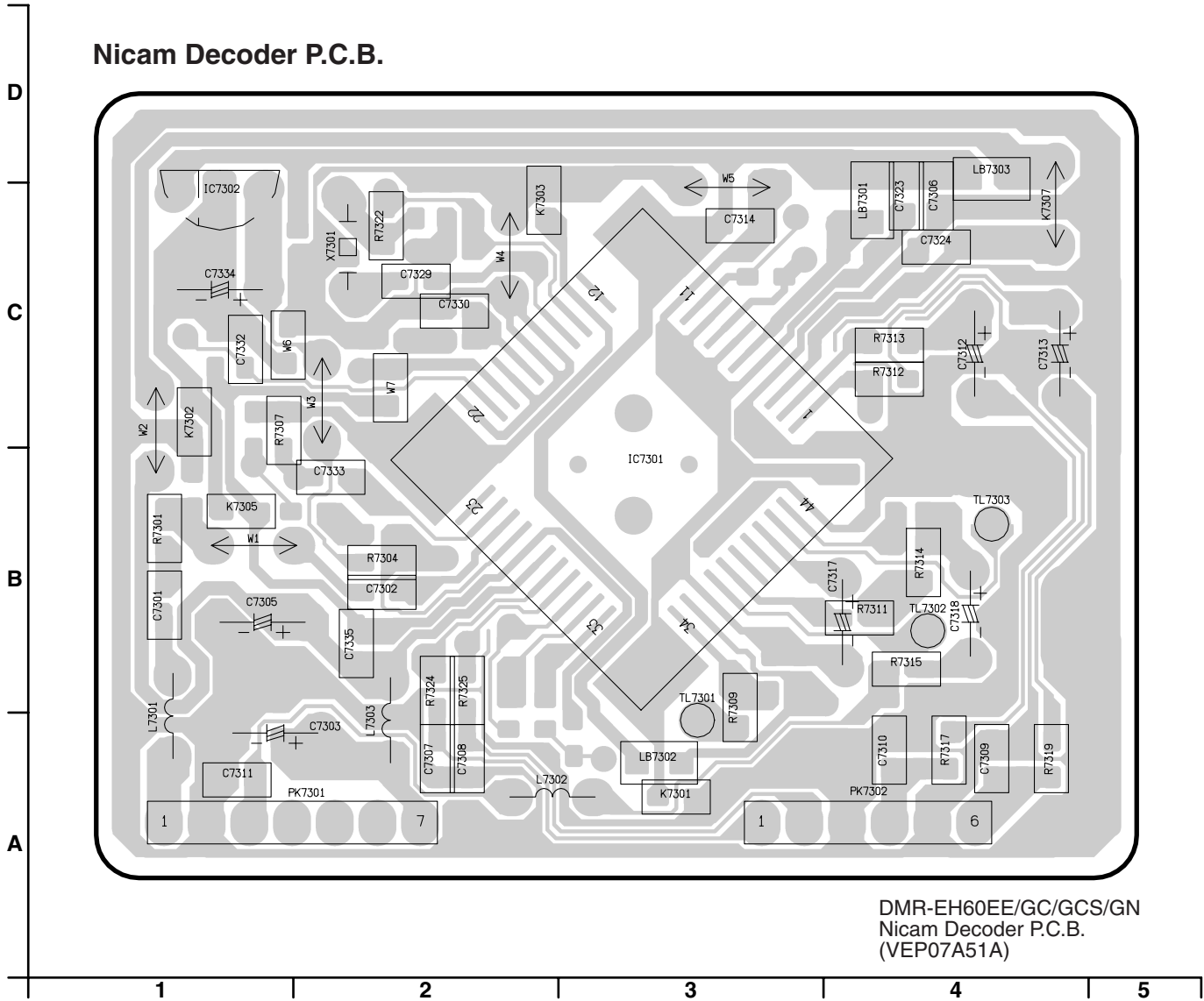| Ref	Addr	Ref	Addr	Ref	Addr	Ref	Addr	Ref	Addr	Ref	Addr	Ref	Addr	Ref	Addr
Integrated Circuit		TW7501	D-2	LB7507	D-3	C3057	C-8	C7407	E-4	R1507	B-5	R4074	C-7	R7565	D-4
IC1501	B-4	Connector		LB7508	D-3	C3058	C-8	C7408	F-5	R1508	B-5	R4076	C-8	R7566	D-4
IC1502	B-3	JK3001	C-8	LB7509	C-3	C3059	C-8	C7416	E-5	R1511	B-4	R4077	C-7	R7568	C-3
IC1504	B-5	JK3002	B-2	LB7510	D-4	C3060	C-8	C7427	E-5	R1512	B-4	R4078	C-7	R7570	B-6
IC1505	F-5	JK3003	B-8	LB7515	F-3	C3064	B-8	C7439	B-5	R1513	B-3	R4079	C-8	R7571	D-4
IC1510	F-4	JK3901	D-8	LB7516	E-2	C3070	B-2	C7447	B-3	R1515	F-4	R4080	C-7	R7574	D-4
IC1511	B-2	JK3903	B-8	LB7517	F-2	C3071	B-1	C7448	B-3	R1520	A-5	R4081	C-7	R7575	D-4
IC3001	E-6	P1501	B-6	LB7518	E-2	C3072	B-2	C7501	E-2	R3006	D-6	R4088	C-7	R7576	D-4
IC4009	C-7	P1502	A-2	LB7519	E-2	C3910	D-7	C7502	E-2	R3007	D-6	R4089	C-7	R7577	C-4
IC4011	C-3	P7402	B-3	Capacitor		C3911	D-7	C7503	E-2	R3054	C-8	R4090	C-8	R7578	E-5
IC4012	C-5	P7504	B-7	C1501	B-5	C3914	E-6	C7504	E-2	R3055	C-7	R4093	C-8	R7579	E-5
IC7401	B-5	P7507	C-2	C1503	B-6	C3915	E-6	C7507	E-2	R3056	B-7	R4094	E-6	R7582	D-4
IC7402	F-5	P7506	A-5	C1504	B-6	C3916	C-7	C7510	D-2	R3057	B-8	R4903	B-7	R7583	E-4
IC7403	F-8	PP7401	F-7	C1505	B-5	C3917	C-7	C7511	D-2	R3058	B-7	R7401	F-5	R7584	E-4
IC7501	D-3	Diode		C1506	B-5	C3918	D-7	C7512	D-2	R3059	B-8	R7402	F-7	R7585	E-4
IC7502	D-3	D1501	A-5	C1507	B-6	C3919	D-7	C7516	D-3	R3060	A-1	R7403	E-4	R7586	E-4
IC7503	E-5	D3901	E-8	C1508	B-3	C3928	E-6	C7517	D-3	R3061	B-2	R7404	E-4	R7587	E-4
IC7504	D-2	D4005	C-7	C1509	B-3	C3929	B-3	C7518	D-3	R3062	B-1	R7406	E-4	R7588	E-4
IC7505	E-3	D4006	C-7	C1510	B-4	C3935	E-7	C7519	D-3	R3901	B-7	R7407	E-4	R7589	E-4
IC7506	D-4	D7403	E-4	C1511	B-3	C3951	B-3	C7520	D-3	R3902	B-8	R7408	E-4	R7590	E-4
IC7507	B-4	D7501	E-2	C1512	B-3	C3952	D-8	C7522	D-3	R3903	A-8	R7410	B-3	R7597	F-2
Transistor		D7502	E-4	C1515	B-5	C3953	D-8	C7523	D-3	R3912	D-7	R7421	E-5	R7598	F-2
Q4004	B-2	D7504	F-2	C1517	B-3	C3954	D-8	C7524	D-3	R3913	D-7	R7422	E-5	R7599	F-2
Q4006	C-8	D7505	F-2	C1518	B-5	C3955	D-7	C7528	D-3	R3914	D-7	R7438	C-3	R7600	E-3
Q4007	C-8	D7506	E-2	C1520	F-4	C3956	D-7	C7529	D-3	R3918	D-7	R7439	C-3	R7601	E-3
Q4008	C-7	D7507	E-2	C1521	E-5	C3957	D-7	C7531	D-3	R3919	D-7	R7440	C-3	R7602	D-1
Q4009	C-7	D7508	F-2	C1522	F-4	C3958	D-7	C7533	D-3	R3920	D-7	R7441	C-4	R7606	E-3
Q7401	E-4	D7509	C-2	C1526	B-4	C3961	D-7	C7534	D-4	R3921	D-7	R7442	C-4	R7607	D-3
Q7501	E-2	Crystal Osillator		C1527	B-4	C3962	D-7	C7535	E-5	R3922	D-7	R7443	B-4	R7608	E-3
Q7502	E-2	X7501	D-3	C1535	F-4	C4003	D-7	C7539	D-3	R3923	D-7	R7444	B-5	R7612	E-2
Q7503	E-2	X7502	D-3	C1536	F-4	C4005	E-5	C7540	D-3	R3924	E-8	R7445	B-5	R7614	F-2
Q7504	E-3	IC Protector		C1538	B-2	C4006	E-5	C7541	D-3	R3925	D-8	R7446	B-5	R7615	F-2
Q7506	E-4	IP1501	B-6	C1539	A-2	C4008	E-5	C7542	D-3	R3927	D-8	R7501	E-2	R7616	E-3
Q7507	E-4	IP7501	E-2	C1540	A-2	C4019	D-6	C7543	D-4	R3928	E-8	R7502	E-2	R7617	F-2
Q7508	E-4	Coil		C3001	D-6	C4021	D-5	C7544	D-4	R3929	D-8	R7503	E-2	R7618	F-2
Q7510	E-2	L1501	A-4	C3002	D-6	C4023	E-5	C7547	D-4	R3930	D-8	R7504	E-2	R7619	E-3
Q7511	B-5	L1504	B-6	C3003	D-6	C4024	E-6	C7550	D-4	R3932	E-8	R7505	E-2	R7620	E-4
Transistor-resistor		L4901	B-7	C3004	D-6	C4025	E-5	C7551	D-4	R3934	E-7	R7506	E-2	R7621	D-3
QR4002	B-2	L7401	B-4	C3005	D-6	C4027	E-6	C7552	E-4	R3935	E-7	R7507	E-3	R7622	D-4
QR4003	B-2	L7403	F-5	C3006	D-7	C4028	E-6	C7553	E-4	R3975	D-6	R7508	E-2	R7623	C-2
QR4004	B-2	L7404	B-4	C3007	D-7	C4033	C-7	C7554	E-4	R3976	D-6	R7510	E-2	R7624	B-4
QR4005	A-2	L7501	E-2	C3008	D-7	C4034	C-7	C7555	D-4	R3983	D-7	R7518	D-2	R7625	B-4
QR7401	D-4	LB1503	B-6	C3009	D-7	C4055	C-3	C7556	E-3	R3984	D-7	R7527	D-3	R7626	B-5
QR7403	E-4	LB1504	B-6	C3010	D-7	C4056	C-3	C7557	E-3	R3987	D-8	R7528	D-3	R7627	B-5
QR7404	E-4	LB1506	B-6	C3011	D-7	C4057	C-7	C7558	D-3	R3988	D-8	R7529	D-3	R7628	D-4
QR7503	E-7	LB3001	E-7	C3012	E-7	C4059	C-3	C7565	F-2	R3989	D-8	R7531	D-3	R7629	D-2
QR7506	D-4	LB3002	E-7	C3013	E-7	C4060	C-7	C7569	F-2	R3990	D-8	R7532	D-3	R7630	D-2
QR7507	D-3	LB3003	E-7	C3014	E-7	C4061	C-7	C7570	F-2	R3991	D-7	R7533	D-3	R7631	D-2
QR7508	E-2	LB3005	C-8	C3015	E-7	C4062	C-6	C7571	E-2	R3992	D-8	R7534	D-3	R7639	D-1
Test Point		LB3006	C-8	C3016	E-7	C4063	C-7	C7572	F-2	R3993	D-7	R7535	D-3	R7640	E-1
CL8017	A-7	LB3007	C-8	C3017	E-7	C4064	C-7	C7573	F-2	R3994	D-8	R7536	D-3	R7641	D-1
CL8018	A-7	LB3008	E-7	C3018	E-7	C4065	C-7	C7577	E-4	R4002	A-2	R7537	D-3	R7642	D-1
TL3001	D-6	LB3009	A-1	C3019	E-6	C4067	E-6	C7578	D-2	R4004	A-2	R7543	D-3	R7643	D-1
TL4001	D-4	LB3010	B-2	C3020	E-7	C4070	B-5	C7579	C-2	R4006	E-6	R7544	D-3	R7644	E-1
TL7501	D-3	LB3011	B-2	C3021	E-7	C4072	C-6	C7581	D-4	R4007	F-6	R7548	C-3	R7648	F-1
TL7502	D-2	LB3012	B-2	C3022	E-6	C4077	C-6	C7584	C-2	R4008	E-5	R7549	D-3	R7649	D-4
TL7503	D-5	LB3013	B-2	C3025	D-6	C4082	C-8	C7585	A-2	R4010	E-5	R7550	E-5	R7651	D-3
TL7504	D-5	LB3907	D-8	C3026	D-6	C4083	C-8	C7587	B-4	R4011	E-5	R7551	E-5	R7652	D-4
TL7505	D-3	LB3908	D-8	C3027	D-6	C4092	C-7	C7588	B-5	R4013	E-6	R7552	E-5	R7653	D-4
TL7506	D-3	LB3911	D-8	C3028	D-6	C4901	B-7	C7590	B-5	R4014	B-2	R7553	E-5	R7655	D-3
TL7507	D-3	LB3912	D-7	C3029	D-6	C4902	B-7	C7592	F-1	R4017	B-2	R7557	D-3	Transformer	
TL7508	E-5	LB3913	D-7	C3030	D-6	C4903	B-7	Resistor		R4046	C-7	R7558	D-3	T7501	F-3
TL7509	D-4	LB7401	E-4	C3031	D-6	C4904	A-8	R1503	A-5	R4047	C-7	R7559	D-4		
TL7510	D-6	LB7406	E-5	C3032	D-7	C7401	B-5	R1504	B-5	R4055		R7560	D-4		
TL7511	D-4	LB7408	B-3	C3033	D-6	C7402	F-8	R1505	B-3	R4057	C-7	R7561	D-4		
TL7512	D-4	LB7409	B-3	C3034	D-6	C7403	F-5	R1506	B-5	R4066	C-5	R7562	D-4		
TL7513	C-2	LB7414	B-4	C3035	E-7	C7404	F-8			R4067	B-5	R7563	D-4		
TL7514	F-2	LB7415	B-4	C3038	E-6	C7405	F-4			R4071	C-7	R7564	D-4		
TL7515	D-3	LB7501	E-2	C3039	E-6	C7406	F-8								

19.3. Tuner P.C.B., LED P.C.B., Front (L) P.C.B.

LED P.C.B.

Tuner P.C.B.

Front (L) P.C.B.

DMR-EH60EE/GC/GCS/GN
Tuner P.C.B.
(VEP07A77C)

DMR-EH60EE/GC/GCS/GN
LED P.C.B. (VEP70116A: EH60GC/GCS/GN,
                VEP70116C: EH60EE)
Front (L) P.C.B. (VEP70115A)

19.4. Nicam Decoder P.C.B., DV Jack P.C.B.

Nicam Decoder P.C.B.

DMR-EH60EE/GC/GCS/GN
Nicam Decoder P.C.B.
(VEP07A51A)

DV Jack P.C.B.

DMR-EH60EE/GC/GCS/GN
DV JACK P.C.B.
(VEP73123A)

19.5. SD Card P.C.B.

Card P.C.B.

(Component Side)

DMR-EH60EE/GC/GCS/GN
Card P.C.B. (Component Side)
(VEP73121E)

(Foil Side)

DMR-EH60EE/GC/GCS/GN
Card P.C.B. (Foil Side)
(VEP73121E)
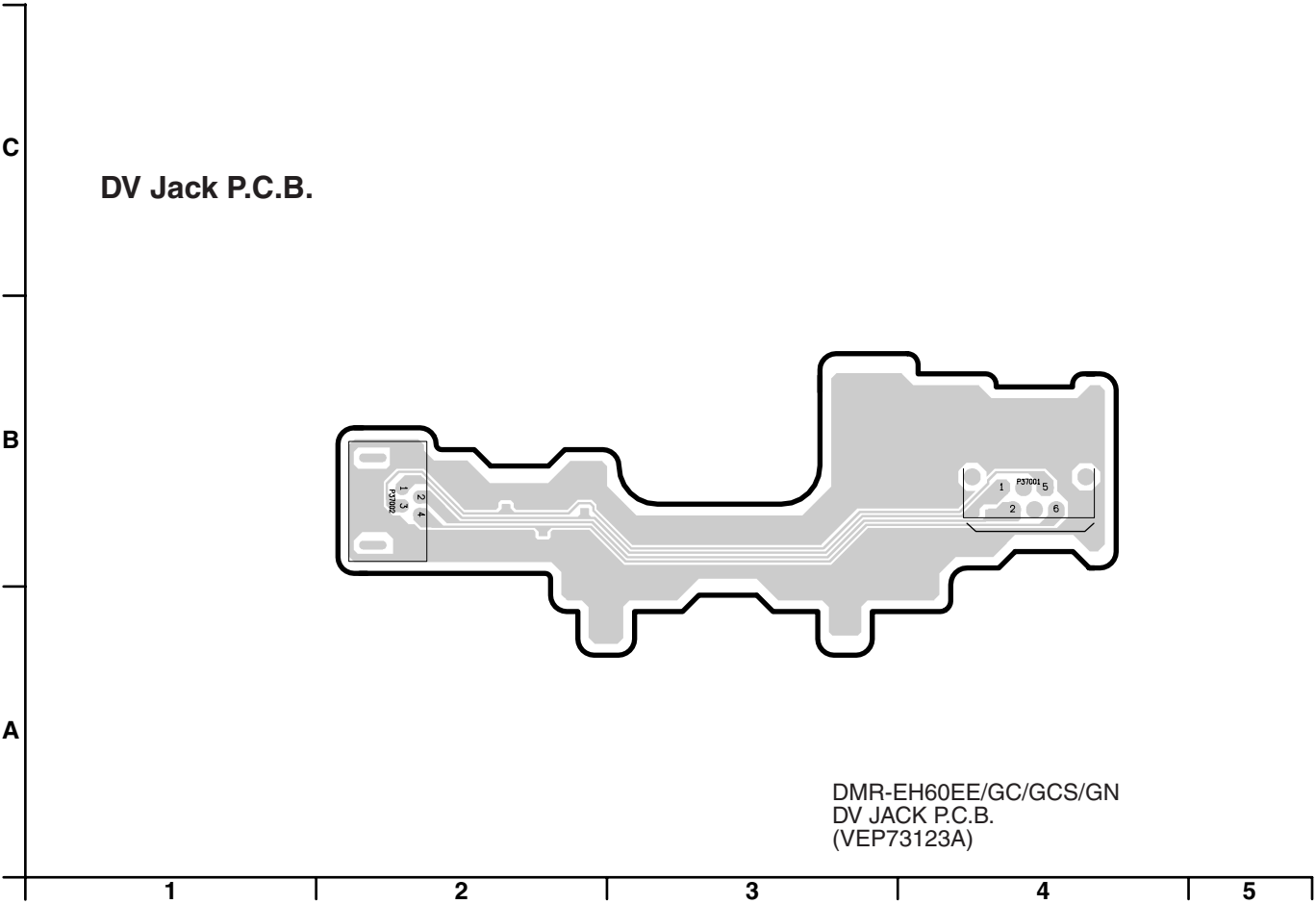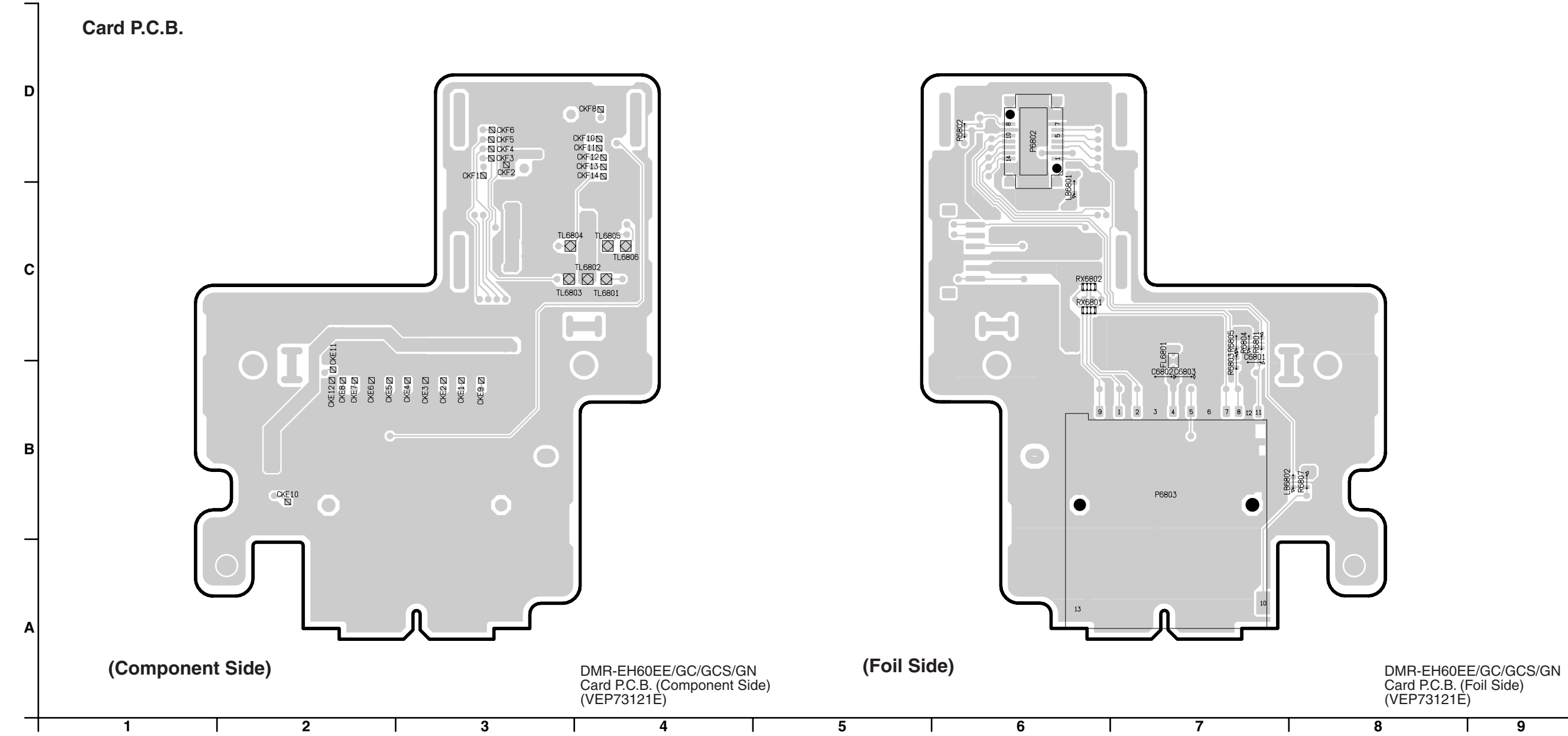
20 Exploded Views

20.1. Casing Parts & Mechanism Section

20.2. Packing & Accessories Section

21 Replacement Parts List

Notes:

*Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*"(IA)-(ID)", marks in Remarks indicate languages of instruction manuals. [(IA): Russian/Ukrainian, (IB): Arabic, (IC): English, (ID): Chinese]

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
n	01	CASING/ACCESSORY/PACKING	1	(RTL)
1	VEP01961A	POWER SUPPLY P.C.B.	1	(RTL)
2	VEP79107Q	MAIN P.C.B.	1	(RTL)(EE)
2	VEP79107S	MAIN P.C.B.	1	(RTL) (GC)(GCS)(GN)
2-1	VEP07A51A-1	DECODER P.C.B.	1	(RTL)
3	RFKBEH60EE	DIGITAL P.C.B.	1	(RTL)(EE)
3	RFKBEH60GC	DIGITAL P.C.B.	1	(RTL)(GC)
3	RFKBEH60GCS	DIGITAL P.C.B.	1	(RTL)(GCS)
3	RFKBEH60GN	DIGITAL P.C.B.	1	(RTL)(GN)
4	VEP07A77C	TUNER P.C.B.	1	(RTL)
5	VEP70115A	FRONT(L) P.C.B.	1	(RTL)
6	VWJ1775	FFC(40P)	1	
7	VEE1A60	WIRE WITH CONNECTOR(4P)	1	
8	VEE1B41	CABLE	1	
9	K1MZ40Z00002	HDD CONNECTOR	1	
10	VEE1B60	HDD CABLE	1	
11	VEP70116C	LED P.C.B.	1	(RTL)(EE)
11	VEP70116A	LED P.C.B.	1	(RTL) (GC)(GCS)(GN)
12	VEP73121E	SD CARD P.C.B.	1	(RTL)
12-1	RYQ0556A-S	CARD HOLDER ASS'Y	1	
12-2	RMV0298	FFC HOLDER	1	
12-3	XTN2+8GFJ	SCREW	1	
12-4	XTN2+8GFJ	SCREW	1	
12-5	RGL0677-Q	PANEL LIGHT SD	1	
12-6	RMR1697-W	SD REFLECTOR	1	
13	VWJ1780	FFC(40P)	1	
14	RGR0354F-G1	REAR PANEL	1	(EE) ⚠
14	RGR0354F-K1	REAR PANEL	1	(GC) ⚠
14	RGR0354F-H1	REAR PANEL	1	(GCS) ⚠
14	RGR0354F-J1	REAR PANEL	1	(GN) ⚠
17	RMA1909	DIGITAL ANGLE	1	
18	RMA1913	POWER PCB ANGLE	1	
19	RMC0625	TUNER GND	1	
20	N3CBBUM00032	HDD	1	⚠
20	RFKV0046HDK	HDD 200GB	1	
21	VEP73123A	DV JACK P.C.B.	1	(RTL)

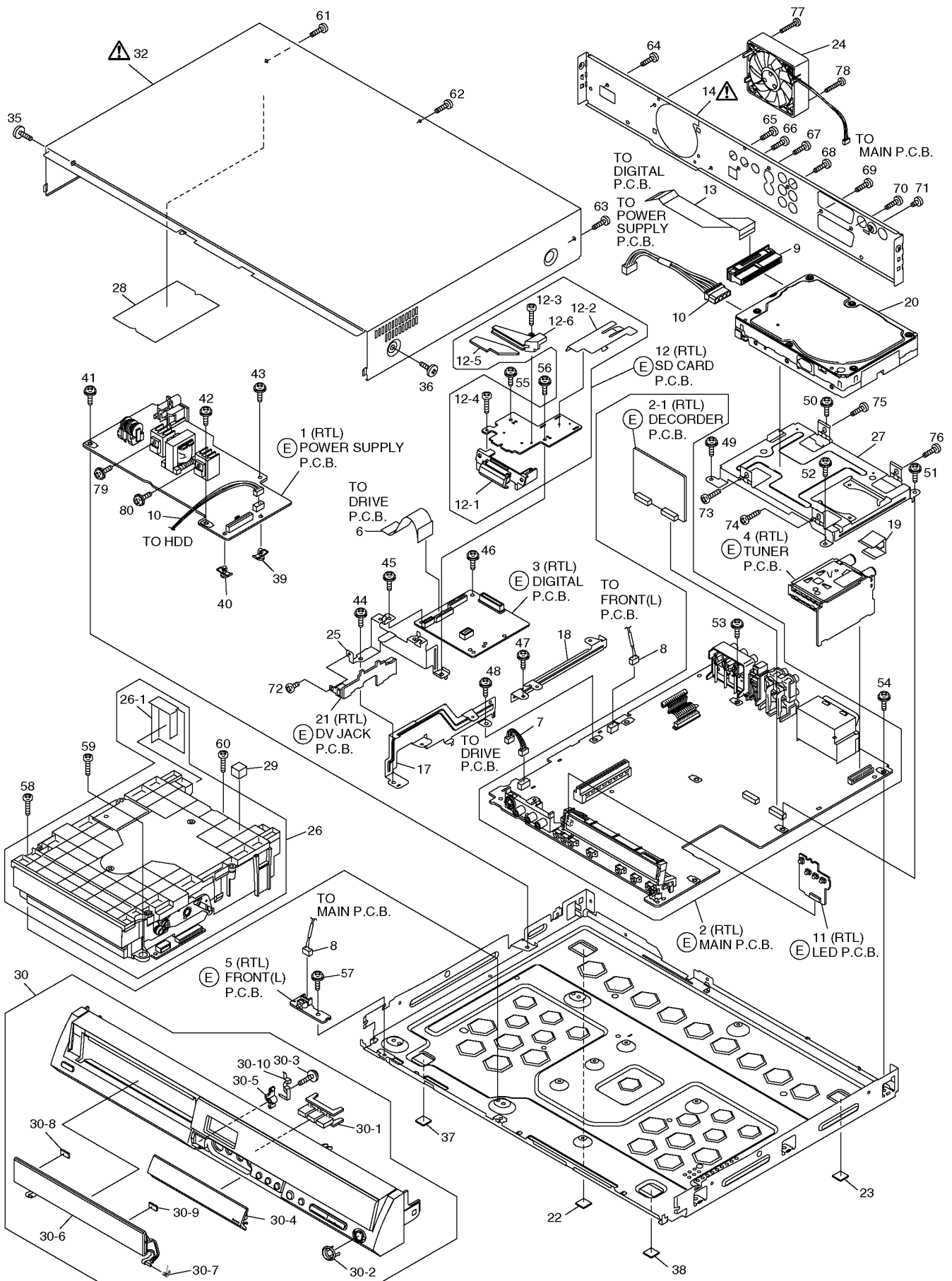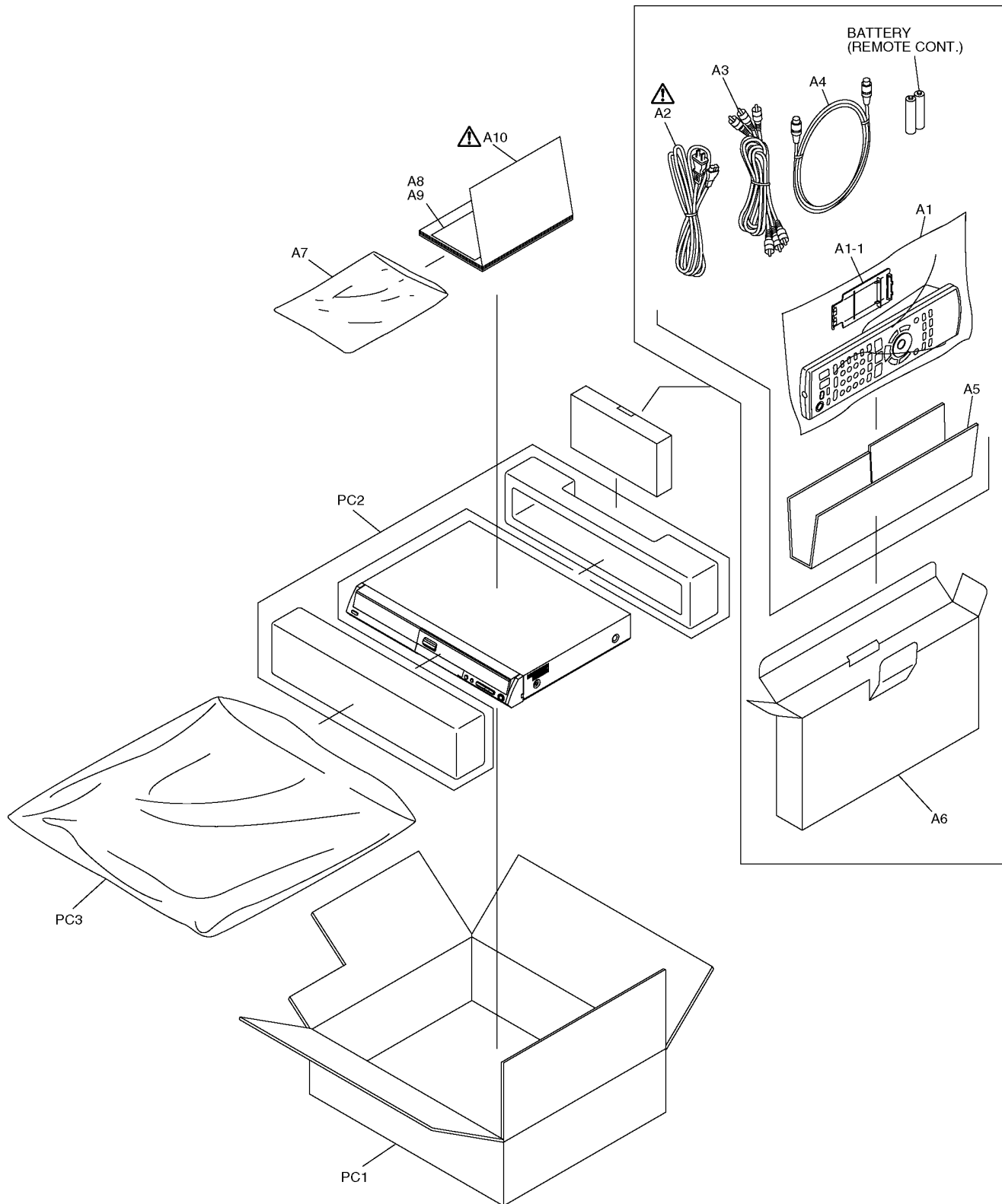| Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
22	RKA0177-K	LEG CUSHION	1	
23	RKA0177-K	LEG CUSHION	1	
24	L6FAKCCE0013	FAN MOTOR	1	
25	RMA1910A-1	SD CARD ANGLE	1	
26	RFKNVXY1872	RAM DRIVE UNIT	1	(RTL)
26-1	RMV0307	BARRIER	1	
27	RMN0823	HDD BRACKET	1	
28	RMV0301	BARRIER	1	
29	RMX0325	MECHA SPACER	1	
30	RYP1270J-S1	FRONT PANEL ASS'Y 1	1	(EE)
30	RYP1270L-S1	FRONT PANEL ASS'Y 1	1	(GC)
30	RYP1270R-S	FRONT PANEL ASS'Y 1	1	(GCS)
30	RYP1270K-S1	FRONT PANEL ASS'Y 1	1	(GN)
30-1	RGL0678-Q	PANEL LIGHT	1	
30-2	RGK1885-S	REC BUTTON RING	1	
30-3	RHD26045	SCREW	1	
30-4	RKF0729J-S	PANEL DOOR	1	
30-5	RMR1698-S	SHAFT HOLDER	1	
30-6	RKF0730-S	TRAY DOOR	1	
30-7	VMB3410	TRAY SPRING	1	
30-8	RMX0302	DOOR DAMPER	1	
30-9	RMX0302	DOOR DAMPER	1	
30-10	RMC0660-1	MIRROR EARTH	1	
32	RKM0532A-S	TOP CASE	1	⚠
35	RHD30113	SCREW	1	
36	RHD30113	SCREW	1	
37	RKA0166-T	LEG RUBBER	1	
38	RKA0166-T	LEG RUBBER	1	
39	RMX0323	PCB SPACER	1	
40	RMX0323	PCB SPACER	1	
41	RHD30111-3	SCREW	1	
42	RHD30111-3	SCREW	1	
43	RHD30111-3	SCREW	1	
44	RHD30111-3	SCREW	1	
45	RHD30111-3	SCREW	1	
46	RHD30111-3	SCREW	1	
47	RHD30111-3	SCREW	1	
48	RHD30111-3	SCREW	1	
49	RHD30111-3	SCREW	1	
50	RHD30111-3	SCREW	1	
51	RHD30111-3	SCREW	1	
52	RHD30111-3	SCREW	1	
53	RHD30111-3	SCREW	1	
54	RHD30111-3	SCREW	1	
55	RHD30111-3	SCREW	1	
56	RHD30111-3	SCREW	1	
57	RHD30111-3	SCREW	1	
58	RHD30115-3	SCREW	1	
59	RHD30115-3	SCREW	1	
60	RHD30115-3	SCREW	1	
61	VHD0690-1	SCREW	1	
62	VHD0690-1	SCREW	1	
63	VHD0690-1	SCREW	1	
64	VHD0690-1	SCREW	1	
65	VHD0690-1	SCREW	1	
66	VHD0690-1	SCREW	1	
67	VHD0690-1	SCREW	1	
68	VHD0690-1	SCREW	1	
69	VHD0690-1	SCREW	1	
70	VHD0690-1	SCREW	1	
71	XSN3+4FJK	SCREW	1	
72	XSN3+4FJK	SCREW	1	
73	RHD32001	SCREW	1	
74	RHD32001	SCREW	1	
75	RHD32001	SCREW	1	
76	RHD32001	SCREW	1	
77	XTB3+25JFJK	SCREW	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
78	XTB3+25JFJK	SCREW	1	
79	XYN3+J8FJ	SCREW	1	
80	XYN3+J8FJ	SCREW	1	
A1	EUR7729KD0	REMOTE CONTROL ASS'Y	1	(EE)
A1	EUR7729KJ0	REMOTE CONTROL ASS'Y	1	(GC)
A1	EUR7729KF0	REMOTE CONTROL ASS'Y	1	(GCS)(GN)
A1-1	UR77EC2903A	BATTERY COVER	1	
A2	VJA0664	AC CORD	1	K2CR2DA00004 (EE)(GC)(GCS) ⚠
A2	RJA0053-3X	AC CORD	1	(GC) ⚠
A2	K2CJ2DA00008	AC CORD	1	(GN) ⚠
A3	K2KA6BA00003	AV CORD	1	
A4	VJA1089	RF COAXIAL CABLE	1	K1TWACC00001
A5	RPQ1594	PAD	1	
A6	RPQF0254	ACCESSORY CASE	1	
A7	RPF0378	POLYETHYLENE BAG(F.B.)	1	
A8	RQCA1395	NOTE SHEET FOR SD CARD	1	
A9	RQCC2704	DVD MEDIA SHEET	1	(EE)
A10	RQT8137-R	OPERATING INSTRUCTIONS	1	(IA)(EE) ⚠
A10	RQT8140-A	OPERATING INSTRUCTIONS	1	(IB)(GC) ⚠
A10	RQT8139-L	OPERATING INSTRUCTIONS	1	(IC)(GC)(GCS)(GN) ⚠
A10	RQT8138-K	OPERATING INSTRUCTIONS	1	(ID)(GCS) ⚠
PC1	RPG7644	PACKING CASE	1	(EE)
PC1	RPG7642	PACKING CASE	1	(GC)
PC1	RPG7641	PACKING CASE	1	(GCS)
PC1	RPG7639	PACKING CASE	1	(GN)
PC2	RPN1798	CUSHION	1	
PC3	VPF0505	POLYETHYLENE BAG(UNIT)	1	
n	02	VEP79107Q/S	1	(MAIN P.C.B.)
C1501	ECJ1VB1E223K	25V 0.022U	1	
C1503	F2A1C221A701	16V 220U	1	
C1504	EEUFC1E101S	25V 100U	1	
C1505	ECJ2FB0J106K	6.3V 10U	1	
C1506	F2A1A470A388	10V 47U	1	
C1507	F2A1A470A388	10V 47U	1	
C1508	ECJ1VB1H103K	50V 0.01U	1	
C1509	ECJ1VB0J105K	6.3V 1U	1	
C1510	ECJ1VB1A105K	10V 1U	1	
C1511	ECJ1VB0J105K	6.3V 1U	1	
C1512	ECJ1VB0J105K	6.3V 1U	1	
C1515	F2A1A470A388	10V 47U	1	
C1517	ECJ1VC1H471J	50V 470P	1	
C1518	F2A0J681A550	6.3V 680U	1	
C1520	ECJ1VB1A105K	10V 1U	1	
C1521	ECJ1VB0J105K	6.3V 1U	1	
C1522	ECJ1XC1H331J	50V 330P	1	
C1526	F2A1A101A389	10V 100U	1	
C1527	ECJ2FB0J106K	6.3V 10U	1	
C1535	ECJ1VB1A105K	10V 1U	1	
C1536	ECJ2FB0J106K	6.3V 10U	1	
C1538	ECJ1VB1A105K	10V 1U	1	
C1539	ECJ1VB0J105K	6.3V 1U	1	
C1540	ECJ1VB1H103K	50V 0.01U	1	
C3001	ECJ1XB1C104K	16V 0.1U	1	
C3002	ECJ1VB1H103K	50V 0.01U	1	
C3003	ECJ1XB1C104K	16V 0.1U	1	
C3004	ECJ1XB1C104K	16V 0.1U	1	
C3005	ECA0JM471G	6.3V 470U	1	
C3006	ECA0JM471G	6.3V 470U	1	
C3007	F2A1A4710038	10V 470U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3008	F2A1A1010072	10V 100U	1	
C3009	F2A1A4710038	10V 470U	1	
C3010	F2A1A1010072	10V 100U	1	
C3011	ECJ1XB1C104K	16V 0.1U	1	
C3012	F2A1A4710038	10V 470U	1	
C3013	F2A1A1010072	10V 100U	1	
C3014	ECJ1XB1C104K	16V 0.1U	1	
C3015	ECJ1XB1C104K	16V 0.1U	1	
C3016	ECJ1XB1C104K	16V 0.1U	1	
C3017	ECJ1XB1C104K	16V 0.1U	1	
C3018	ECJ1XB1C104K	16V 0.1U	1	
C3019	ECJ1XB1C104K	16V 0.1U	1	
C3020	ECJ1XB1C104K	16V 0.1U	1	
C3021	ECJ1XB1C104K	16V 0.1U	1	
C3022	ECJ1XB1C104K	16V 0.1U	1	
C3025	ECJ1XB1C104K	16V 0.1U	1	
C3026	ECJ1VB0J105K	6.3V 1U	1	
C3027	ECJ1XB1C104K	16V 0.1U	1	
C3028	ECEA1HKA4R7	50V 4.7U	1	
C3029	ECJ1XB1C104K	16V 0.1U	1	
C3030	ECEA1HKA4R7	50V 4.7U	1	
C3031	ECJ1VB1H103K	50V 0.01U	1	
C3032	ECEA0JKS101	6.3V 100U	1	
C3033	ECJ1VB1H103K	50V 0.01U	1	
C3034	ECJ1VB1H103K	50V 0.01U	1	
C3035	ECEA0JKS101	6.3V 100U	1	
C3038	ECJ1XB1C104K	16V 0.1U	1	
C3039	ECJ1XB1C104K	16V 0.1U	1	
C3057	ECJ1VB1H222K	50V 2200P	1	
C3058	ECJ1VC1H471J	50V 470P	1	
C3059	ECJ1VB1H222K	50V 2200P	1	
C3060	ECJ1VC1H471J	50V 470P	1	
C3064	ECJ1XB1C104K	16V 0.1U	1	
C3070	ECJ1VB1H222K	50V 2200P	1	
C3071	ECJ1VB1H222K	50V 2200P	1	
C3072	ECJ1XB1C104K	16V 0.1U	1	
C3910	F2A1V100A534	35V 10U	1	
C3911	F2A1V100A534	35V 10U	1	
C3914	F2A1H100A236	50V 10U	1	
C3915	F2A1H100A236	50V 10U	1	
C3916	F2A1H1R0A236	50V 1U	1	
C3917	F2A1H1R0A236	50V 1U	1	
C3918	F2A1H100A236	50V 10U	1	
C3919	F2A1H100A236	50V 10U	1	
C3928	F2A1V100A534	35V 10U	1	
C3929	F2A1H1R0A638	50V 1U	1	
C3935	F2A1E2210050	25V 220U	1	
C3951	ECJ1XC1H470J	50V 47P	1	
C3952	ECJ1XC1H470J	50V 47P	1	
C3953	ECJ1VC1H471J	50V 470P	1	
C3954	ECJ1VC1H471J	50V 470P	1	
C3955	ECJ1VC1H221J	50V 220P	1	
C3956	ECJ1VC1H221J	50V 220P	1	
C3957	ECJ1VC1H471J	50V 470P	1	
C3958	ECJ1VC1H471J	50V 470P	1	
C3961	ECJ1VC1H221J	50V 220P	1	
C3962	ECJ1VC1H221J	50V 220P	1	
C4003	ECJ1VB0J105K	6.3V 1U	1	
C4005	F2A1H2200032	50V 22U	1	
C4006	F2A1V100A534	35V 10U	1	
C4008	EEUFC1E101S	25V 100U	1	
C4019	F2A1V100A534	35V 10U	1	
C4021	F2A1V100A534	35V 10U	1	
C4023	F2A1V100A534	35V 10U	1	
C4024	EEUFC1E101S	25V 100U	1	
C4025	F2A1V100A534	35V 10U	1	
C4027	F2A1H2200032	50V 22U	1	
C4028	F2A1V100A534	35V 10U	1	
C4033	F2A1C220A709	16V 22U	1	
C4034	F2A1C220A709	16V 22U	1	
C4055	ECJ1VF1C104Z	16V 0.1U	1	
C4056	F2A1C471A628	16V 470U	1	
C4057	ECUV1H330JCG	50V 33P	1	ECJ2VC1H330J

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C4059	ECQV1H104JL	50V 0.1U	1	
C4060	ECUV1H330JCG	50V 33P	1	ECJ2VC1H330J
C4061	ECJ1VF1C104Z	16V 0.1U	1	
C4062	F2A1C221A637	16V 220U	1	
C4063	F2A1C220A709	16V 22U	1	
C4064	F2A1C220A709	16V 22U	1	
C4065	ECJ1VF1C104Z	16V 0.1U	1	
C4067	F2A1E2210050	25V 220U	1	
C4070	F2A1C221A637	16V 220U	1	
C4072	F2A1C221A637	16V 220U	1	
C4077	ECJ1VF1C104Z	16V 0.1U	1	
C4082	ECJ2VC1H561J	50V 560P	1	
C4083	ECJ2VC1H561J	50V 560P	1	
C4092	F2A1C101A637	16V 100U	1	
C4901	F2A0J470A599	6.3V 47U	1	
C4902	ECJ1VF1C104Z	16V 0.1U	1	
C4903	F2A1E4700048	25V 47U	1	
C4904	ECJ1VF1C104Z	16V 0.1U	1	
C7401	F2A1C471A628	16V 470U	1	
C7402	ECJ1VC1H471J	50V 470P	1	
C7403	F2A0J470A599	6.3V 47U	1	
C7404	ECJ1VB0J105K	6.3V 1U	1	
C7405	ECJ1XB1C104K	16V 0.1U	1	
C7406	ECJ1VB1A105K	10V 1U	1	
C7407	ECJ1XB1C104K	16V 0.1U	1	
C7408	ECJ1XB1C104K	16V 0.1U	1	
C7416	F2A1E4700048	25V 47U	1	
C7427	ECJ1VB1H222K	50V 2200P	1	
C7439	ECJ1XB1C104K	16V 0.1U	1	
C7447	ECJ1VB0J105K	6.3V 1U	1	
C7448	ECJ1VB0J105K	6.3V 1U	1	
C7501	ECJ2YB0J475K	6.3V 4.7U	1	
C7502	ECJ1XC1H101J	50V 100P	1	
C7503	ECJ2YB0J475K	6.3V 4.7U	1	
C7504	ECJ1XB1C104K	16V 0.1U	1	
C7505	ECJ1XB1C104K	16V 0.1U	1	
C7507	ECJ1VF1C104Z	16V 0.1U	1	
C7510	ECJ1XB1C104K	16V 0.1U	1	
C7511	ECJ1XC1H101J	50V 100P	1	
C7512	ECJ1VF1C104Z	16V 0.1U	1	
C7516	ECJ1VC1H180J	50V 18P	1	
C7517	ECJ1VC1H180J	50V 18P	1	
C7518	ECJ1XC1H220J	50V 22P	1	
C7519	ECJ1VC1H180J	50V 18P	1	
C7520	ECJ1XB1C104K	16V 0.1U	1	
C7522	ECJ1XC1H101J	50V 100P	1	
C7523	ECJ1VB1H103K	50V 0.01U	1	
C7524	ECJ1XB1C104K	16V 0.1U	1	
C7528	ECJ1VF1C104Z	16V 0.1U	1	
C7529	ECEA0JKS470	6.3V 47U	1	
C7531	ECJ1VC1H100C	50V 10P	1	
C7532	ECJ1VC1H100C	50V 10P	1	
C7533	ECEA0JKS470	6.3V 47U	1	
C7534	ECJ1VB1H103K	50V 0.01U	1	
C7535	ECJ1VF1C104Z	16V 0.1U	1	
C7539	ECJ1XC1H470J	50V 47P	1	
C7540	ECJ1VB1H103K	50V 0.01U	1	
C7541	ECJ1XC1H470J	50V 47P	1	
C7542	ECJ1XB1C104K	16V 0.1U	1	
C7543	ECJ1XC1H470J	50V 47P	1	
C7544	ECJ1XB1C104K	16V 0.1U	1	
C7546	ECJ1VB0J105K	6.3V 1U	1	
C7547	ECJ1VB0J105K	6.3V 1U	1	
C7550	ECEA0JKS470	6.3V 47U	1	
C7551	ECJ1XB1C104K	16V 0.1U	1	
C7552	ECJ1VC1H221J	50V 220P	1	
C7553	ECJ1VC1H221J	50V 220P	1	
C7554	ECJ1VB1H103K	50V 0.01U	1	
C7555	ECJ1VB1H103K	50V 0.01U	1	
C7556	ECJ1VB1H103K	50V 0.01U	1	
C7557	ECJ1VB1H103K	50V 0.01U	1	
C7558	ECJ1VB1H103K	50V 0.01U	1	
C7565	F2A1E221A586	25V 220U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7569	ECQB1H222KF	50V 2200P	1	
C7570	F2A1V470A533	35V 47U	1	
C7571	F2A1H2200032	50V 22U	1	
C7572	ECA1AHG221	10V 220U	1	
C7573	F2A1H2200032	50V 22U	1	
C7577	ECJ1XB1C104K	16V 0.1U	1	
C7578	ECEA0JKS470	6.3V 47U	1	
C7579	ECEA0JKS470	6.3V 47U	1	
C7581	ECJ1VB1H103K	50V 0.01U	1	
C7584	F4D55473A013	5.5V 0.047U	1	
C7585	ECEA0JKS101	6.3V 100U	1	
C7587	ECJ1VB0J105K	6.3V 1U	1	
C7588	ECJ1VB1H103K	50V 0.01U	1	
C7590	ECJ1VF1C104Z	16V 0.1U	1	
C7592	ECJ1VF1A105Z	10V 1U	1	
D1501	MA165TA5	DIODE	1	MA2C16500E
D3901	MA165TA5	DIODE	1	MA2C16500E
D4005	MA3Z142D0RG	DIODE	1	
D4006	MA3Z142D0RG	DIODE	1	
D7403	MA165TA5	DIODE	1	MA2C16500E
D7501	B0BA03600021	DIODE	1	
D7502	1SS355	DIODE	1	B0ACCK000005
D7504	MAZ4300NLF	DIODE	1	
D7505	B0AADM000003	DIODE	1	
D7506	B0AADM000003	DIODE	1	
D7507	B0AAGM000003	DIODE	1	B0AAGM000007
D7508	MAZ4240NMF	DIODE	1	
D7509	B0JDCE000002	DIODE	1	
DP7501	A2BD00000099	FL DISPLAY TUBE	1	
IC1501	C0CBCDD00006	IC	1	
IC1502	C0CBCBD00018	IC	1	
IC1504	C0CBCYH00003	IC	1	
IC1505	C0CBCBD00018	IC	1	
IC1510	C0CBCDG00006	IC	1	
IC1511	C0CBCDD00008	IC	1	
IC3001	C1AB00002100	IC	1	
IC4009	C0ABBB000216	IC	1	
IC4011	C0DBAHD00013	IC	1	
IC4012	C0ABBB000118	IC	1	
IC7401	C0CBCYG00004	IC	1	
IC7402	C0DBCHD00004	IC	1	
IC7403	C0CBCDD00006	IC	1	
IC7501	C2CBKH000182	IC	1	
IC7502	C0EBE0000504	IC	1	
IC7503	C3EBJC000055	IC	1	
IC7504	C1ZBZ0002791	IC	1	
IC7505	C0EBJ0000336	IC	1	
IC7506	C0EBE0000457	IC	1	
IC7507	C0ABBA000146	IC	1	
IP1501	K5H3022A0013	IC PROTECTOR	1	⚠
IP7501	K5H7512A0010	IC PROTECTOR	1	⚠
IR7501	B3RAD0000092	REMOTE SENSOR	1	
JK3001	K2HA612B0055	JACK,AV4 IN,OUT	1	
JK3002	K1U415B00001	JACK,AV3	1	
JK3003	K2HA210B0002	JACK,S VIDEO	1	
JK3901	K1FB242B0005	JACK,AV1,AV2	1	
JK3903	K1U407B00006	JACK,VIDEO AUDIO OUT	1	
K3901	ERJ3GEY0R00	1/10W 0	1	
K4002	ERJ6GEY0R00V	1/8W 0	1	
K7405	ERJ3GEY0R00	1/10W 0	1	
K7406	ERJ3GEY0R00	1/10W 0	1	
K7503	ERJ3GEY0R00	1/10W 0	1	
K7504	ERJ3GEY0R00	1/10W 0	1	
K7506	ERJ3GEY0R00	1/10W 0	1	
K7507	ERJ3GEY0R00	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
K7512	ERJ3GEY0R00	1/10W 0	1	
L1501	G0A220GA0026	COIL 22UH	1	
L1504	G0A100HA0023	COIL 10UH	1	
L4901	G0C220JA0055	COIL	1	
L7403	G0C2R2JA0019	COIL 2.2UH	1	
L7404	G0A220GA0026	COIL 22UH	1	
L7501	G0C390JA0055	COIL 39UH	1	
LB1503	J0JKB0000003	COIL	1	
LB1504	J0JKB0000003	COIL	1	
LB1506	J0JKB0000003	COIL	1	
LB3001	J0JGC0000020	COIL	1	
LB3002	J0JGC0000020	COIL	1	
LB3003	J0JGC0000020	COIL	1	
LB3005	J0JBC0000011	COIL	1	
LB3006	J0JBC0000011	COIL	1	
LB3007	J0JBC0000011	COIL	1	
LB3008	J0JBC0000011	COIL	1	
LB3009	J0JCC0000103	COIL	1	
LB3010	J0JCC0000103	COIL	1	
LB3011	J0JCC0000103	COIL	1	
LB3012	J0JBC0000011	COIL	1	
LB3013	J0JBC0000011	COIL	1	
LB3907	J0JBC0000011	COIL	1	
LB3908	J0JBC0000011	COIL	1	
LB3911	J0JGC0000020	COIL	1	
LB3912	J0JBC0000011	COIL	1	
LB3913	J0JBC0000011	COIL	1	
LB7401	J0JGC0000020	COIL	1	
LB7406	J0JHC0000032	COIL	1	
LB7408	J0JHC0000032	COIL	1	
LB7409	J0JHC0000032	COIL	1	
LB7414	J0JHC0000032	COIL	1	
LB7415	J0JHC0000032	COIL	1	
LB7501	ERJ3GEY0R00	1/10W 0	1	
LB7507	J0JGC0000020	COIL	1	
LB7508	J0JGC0000020	COIL	1	
LB7509	VLP0175	COIL	1	J0JCC0000060
LB7510	J0JGC0000020	COIL	1	
LB7515	ERJ3GEY0R00	1/10W 0	1	
LB7516	ERJ3GEY0R00	1/10W 0	1	
LB7517	ERJ3GEY0R00	1/10W 0	1	
LB7519	J0JKB0000037	COIL	1	
P1501	K1KA23A00004	CONNECTOR(23P)	1	
P1502	K1KA04AA0301	CONNECTOR(4P)	1	
P7402	K1KA88A00002	CONNECTOR(88P)	1	
P7504	K1KA03AA0301	CONNECTOR(3P)	1	
P7506	K1KA03AA0301	CONNECTOR(3P)	1	
P7507	K1KA06AA0288	CONNECTOR(6P)	1	
PP7401	K1KA18AA0288	CONNECTOR(18P)	1	
Q4004	2SB1218A	TRANSISTOR	1	
Q4006	2SD132800L	TRANSISTOR	1	
Q4007	2SD132800L	TRANSISTOR	1	
Q4008	2SD132800L	TRANSISTOR	1	
Q4009	2SD132800L	TRANSISTOR	1	
Q7401	2SD1819AWL	TRANSISTOR	1	
Q7501	2SB1218A	TRANSISTOR	1	
Q7502	2SD1819AWL	TRANSISTOR	1	
Q7503	2SB1218A	TRANSISTOR	1	
Q7504	2SD1819AWL	TRANSISTOR	1	
Q7506	2SD0601ARL	TRANSISTOR	1	
Q7507	2SD0601ARL	TRANSISTOR	1	
Q7508	2SD1819AWL	TRANSISTOR	1	
Q7510	2SD1994B	TRANSISTOR	1	
Q7511	B1ABMD000004	TRANSISTOR	1	
QR4002	UN5211	TRANSISTOR	1	UNR5211
QR4003	UN5211	TRANSISTOR	1	UNR5211
QR4004	UN5211	TRANSISTOR	1	UNR5211

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
QR4005	UN5211	TRANSISTOR	1	UNR5211
QR7401	UN5213TX	TRANSISTOR	1	UNR521300L
QR7403	UN5215TX	TRANSISTOR	1	UNR521500L
QR7404	UN5215TX	TRANSISTOR	1	UNR521500L
QR7503	UN5214TX	TRANSISTOR	1	UNR521400L
QR7506	UN5212TX	TRANSISTOR	1	UNR521200L
QR7507	UN5210TX	TRANSISTOR	1	UNR52100RL
QR7508	UN5214TX	TRANSISTOR	1	UNR521400L
R1503	ERJ3GEYJ332	1/10W 3.3K	1	
R1504	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R1505	ERDS2FJ271	1/4W 270	1	
R1506	ERJ3RBD103	1/16W 10K	1	
R1507	ERJ3RBD152	1/16W 1.5K	1	
R1508	ERJ3RBD153	1/16W 15K	1	
R1511	ERDS2FJ271	1/4W 270	1	
R1512	ERDS2FJ271	1/4W 270	1	
R1513	ERDS2FJ271	1/4W 270	1	
R1515	ERDS2FJ271	1/4W 270	1	
R1520	ERJ3GEYJ822	1/10W 8.2K	1	
R3006	ERJ3GEYJ822	1/10W 8.2K	1	
R3007	ERJ3GEYJ330	1/10W 33	1	
R3054	ERJ3EKF75R0	1/10W 75	1	
R3055	ERJ3EKF75R0	1/10W 75	1	
R3056	ERJ3EKF75R0	1/10W 75	1	
R3057	ERJ3EKF75R0	1/10W 75	1	
R3058	ERJ3EKF75R0	1/10W 75	1	
R3059	ERJ3EKF75R0	1/10W 75	1	
R3060	ERJ3EKF75R0	1/10W 75	1	
R3061	ERJ3EKF75R0	1/10W 75	1	
R3062	ERJ3EKF75R0	1/10W 75	1	
R3901	ERJ3GEYF750	1/10W 75	1	
R3902	ERJ3GEYF750	1/10W 75	1	
R3903	ERJ3GEYF750	1/10W 75	1	
R3912	D0GB103JA057	1/10W 10K	1	
R3913	D0GB103JA057	1/10W 10K	1	
R3914	ERJ3GEYJ471	1/10W 470	1	
R3918	ERJ3GEYJ471	1/10W 470	1	
R3919	ERJ3GEYF750	1/10W 75	1	
R3920	ERJ3GEYF750	1/10W 75	1	
R3921	ERJ3GEYF750	1/10W 75	1	
R3922	ERJ3GEYJ471	1/10W 470	1	
R3923	ERJ3GEYJ471	1/10W 470	1	
R3924	ERDS2FJ221	1/4W 220	1	
R3925	ERJ3GEYF750	1/10W 75	1	
R3926	ERJ3GEYF750	1/10W 75	1	
R3927	ERJ3GEYF750	1/10W 75	1	
R3928	ERJ3EKF75R0	1/10W 75	1	
R3929	ERJ3EKF75R0	1/10W 75	1	
R3930	ERJ3EKF75R0	1/10W 75	1	
R3932	ERJ3EKF75R0	1/10W 75	1	
R3934	ERJ3EKF75R0	1/10W 75	1	
R3935	ERJ3EKF75R0	1/10W 75	1	
R3975	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R3976	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R3983	D0GB103JA057	1/10W 10K	1	
R3984	D0GB103JA057	1/10W 10K	1	
R3987	D0GB473JA057	1/10W 47K	1	
R3988	D0GB102JA057	1/10W 1K	1	
R3989	D0GB102JA057	1/10W 1K	1	
R3990	D0GB473JA057	1/10W 47K	1	
R3991	D0GB473JA057	1/10W 47K	1	
R3992	D0GB102JA057	1/10W 1K	1	
R3993	D0GB102JA057	1/10W 1K	1	
R3994	D0GB473JA057	1/10W 47K	1	
R4002	D0GB103JA057	1/10W 10K	1	
R4004	D0GB103JA057	1/10W 10K	1	
R4006	ERJ3GEYJ823	1/10W 82K	1	
R4007	ERJ3GEYJ823	1/10W 82K	1	
R4008	ERJ3GEYJ823	1/10W 82K	1	
R4010	D0GB473JA057	1/10W 47K	1	
R4011	D0GB473JA057	1/10W 47K	1	
R4013	ERJ3GEYJ823	1/10W 82K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R4014	D0GB103JA057	1/10W 10K	1	
R4017	D0GB103JA057	1/10W 10K	1	
R4046	D0HB752ZA002	1/10W 7.5K	1	
R4047	D0HB752ZA002	1/10W 7.5K	1	
R4055	JAR0816P123D	1/16W 12K	1	D0HB123ZA002
R4057	JAR0816P123D	1/16W 12K	1	D0HB123ZA002
R4066	ERJ3RBD103	1/16W 10K	1	D0HB103ZA002
R4067	ERJ3RBD103	1/16W 10K	1	D0HB103ZA002
R4071	D0GB473JA057	1/10W 47K	1	
R4074	D0GB473JA057	1/10W 47K	1	
R4076	ERJ3GEYJ821	1/10W 820	1	
R4077	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R4078	ERJ3GEYJ272	1/10W 2.7K	1	
R4079	ERJ3GEYJ272	1/10W 2.7K	1	
R4080	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R4081	ERJ3GEYJ821	1/10W 820	1	
R4088	ERJ3GEYJ272	1/10W 2.7K	1	
R4089	ERJ3GEYJ272	1/10W 2.7K	1	
R4090	ERJ3GEYJ121	1/10W 120	1	
R4093	ERJ3GEYJ121	1/10W 120	1	
R4094	ERJ3GEYJ223	1/10W 22K	1	
R4903	ERJ3GEY0R00	1/10W 0	1	
R7401	ERJ3GEY0R00	1/10W 0	1	
R7402	D0GB103JA057	1/10W 10K	1	
R7403	ERJ3GEYD153V	1/10W 15K	1	D0HB153ZA002
R7404	ERJ3GEYJ223	1/10W 22K	1	
R7405	ERJ3GEYJ471	1/10W 470	1	
R7406	ERJ3GEYJ474	1/10W 470K	1	
R7407	D0GB103JA057	1/10W 10K	1	
R7408	ERJ3GEYD153V	1/10W 15K	1	D0HB153ZA002
R7410	ERJ3GEYJ821	1/10W 820	1	
R7421	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7422	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7438	ERJ3GEYJ220	1/10W 22	1	
R7439	ERJ3GEYJ220	1/10W 22	1	
R7440	ERJ3GEYJ220	1/10W 22	1	
R7441	ERJ3GEYJ220	1/10W 22	1	
R7442	ERJ3GEYJ220	1/10W 22	1	
R7443	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7444	ERJ3RED300	1/16W 3	1	
R7445	ERJ3RBD682	1/16W 6.8K	1	ERJ3RBD682V
R7446	ERJ3RBD202	1/16W 2K	1	
R7501	D0GB102JA057	1/10W 1K	1	
R7502	ERJ3GEYJ392	1/10W 3.9K	1	
R7503	ERJ3GEYJ104	1/10W 100K	1	
R7504	D0GB102JA057	1/10W 1K	1	
R7505	ERJ3GEYD153V	1/10W 15K	1	D0HB153ZA002
R7506	ERJ3GEYJ104	1/10W 100K	1	
R7507	ERJ3GEYF152V	1/10W 1.5K	1	
R7508	ERJ3GEYF562	1/10W 5.6K	1	
R7510	ERJ3GEY0R00	1/10W 0	1	
R7518	ERJ3RBD273	1/16W 27K	1	
R7527	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7528	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7529	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7531	ERJ3GEYJ104	1/10W 100K	1	
R7532	ERJ3GEYJ332	1/10W 3.3K	1	
R7533	ERJ3GEY0R00	1/10W 0	1	
R7534	D0GB103JA057	1/10W 10K	1	
R7535	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7536	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7537	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7543	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7544	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7548	ERJ3GEYJ472	1/10W 4.7K	1	
R7549	ERJ3GEYJ472	1/10W 4.7K	1	
R7550	ERJ3GEYJ223	1/10W 22K	1	
R7551	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7552	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7553	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7557	ERJ3GEYJ511	1/10W 510	1	
R7558	D0GB202JA057	1/10W 2K	1	
R7559	D0GB202JA057	1/10W 2K	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R7560	ERJ3GEYJ472	1/10W 4.7K	1	
R7561	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7562	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7563	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7564	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7565	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7566	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7568	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7570	ERJ3GEYJ392	1/10W 3.9K	1	
R7571	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7574	ERJ3GEYJ223	1/10W 22K	1	
R7575	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7576	D0GB102JA057	1/10W 1K	1	
R7577	D0GB103JA057	1/10W 10K	1	
R7578	D0GB103JA057	1/10W 10K	1	
R7579	ERJ3GEYJ223	1/10W 22K	1	
R7582	ERJ3GEYJ104	1/10W 100K	1	
R7583	ERJ3GEYJ472	1/10W 4.7K	1	
R7584	D0GB473JA057	1/10W 47K	1	
R7585	D0GB225JA057	1/10W 220K	1	
R7586	ERJ3GEYJ273	1/10W 27K	1	
R7587	ERJ3GEYJ224	1/10W 220K	1	
R7588	ERJ3GEYJ104	1/10W 100K	1	
R7589	ERJ3GEYJ221	1/10W 220	1	
R7590	ERJ3GEYJ104	1/10W 100K	1	
R7597	ERJ3GEYJ822	1/10W 8.2K	1	
R7598	ERJ3GEYJ822	1/10W 8.2K	1	
R7599	ERJ3GEYJ822	1/10W 8.2K	1	
R7600	D0GB103JA057	1/10W 10K	1	
R7601	D0GB102JA057	1/10W 1K	1	
R7602	ERJ3GEYJ682	1/10W 6.8K	1	
R7606	ERJ3GEYF393	1/10W 39K	1	
R7607	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7608	ERJ3GEYF433	1/10W 43K	1	
R7612	ERJ3GEYJ332	1/10W 3.3K	1	
R7614	ERJ3GEYJ470	1/10W 47	1	
R7615	D0GB473JA057	1/10W 47K	1	
R7616	D0GB473JA057	1/10W 47K	1	
R7617	ERDS2FJ331	1/4W 330	1	
R7619	D0GB103JA057	1/10W 10K	1	
R7620	D0GB473JA057	1/10W 47K	1	
R7621	ERJ3GEYJ104	1/10W 100K	1	
R7622	ERJ3GEYD153V	1/10W 15K	1	D0HB153ZA002
R7623	D0GB181JA057	1/10W 180	1	
R7624	D0GB103JA057	1/10W 10K	1	
R7625	D0GB103JA057	1/10W 10K	1	
R7626	ERJ3GEYJ821	1/10W 820	1	
R7627	ERJ3GEYJ303	1/10W 30K	1	
R7628	ERJ3GEYJ223	1/10W 22K	1	
R7629	ERJ3GEYJ682	1/10W 6.8K	1	
R7630	ERJ3GEYJ682	1/10W 6.8K	1	
R7631	ERJ3GEYJ682	1/10W 6.8K	1	
R7639	ERJ3GEYJ272	1/10W 2.7K	1	
R7640	ERJ3GEYJ272	1/10W 2.7K	1	
R7641	D0GB473JA057	1/10W 47K	1	
R7642	ERJ3GEYJ562	1/10W 5.6K	1	
R7643	ERJ3GEYJ562	1/10W 5.6K	1	
R7644	ERJ3GEYJ222	1/10W 2.2K	1	
R7648	ERDS2FJ330	1/4W 33	1	
R7649	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7651	ERJ3GEYJ472	1/10W 4.7K	1	
R7652	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7653	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7655	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
S7501	EVQPC105K	SWITCH,EXT LINK	1	
S7502	EVQPC105K	SWITCH,CH DOWN	1	
S7503	EVQPC105K	SWITCH,CH UP	1	
S7504	EVQPC105K	SWITCH,OPEN/CLOSE	1	
S7505	EVQPC105K	SWITCH,SELECT	1	
S7506	EVQPC105K	SWITCH,STOP	1	
S7507	EVQPC105K	SWITCH,PLAY	1	
S7508	EVQPC105K	SWITCH,REC	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
					C1413	F2A1A4710038	10V 470U	1	
T7501	G4D1C0000003	TRANSFORMER	1	⚠	C1421	ECJ2VB1E104K	25V 0.1U	1	
					C1513	F2A1A4710038	10V 470U	1	
W6	ERJ3GEY0R00	1/10W 0	1		C1514	ECJ2VB1H103K	50V 0.01U	1	
W7	ERJ3GEY0R00	1/10W 0	1		C1601	EEUFM1E221	25V 220U	1	
W701	ERJ3GEY0R00	1/10W 0	1		C1602	ECJ2VB1E104K	25V 0.1U	1	
W702	ERJ6GEY0R00V	1/8W 0	1		C1603	ECJ2VB1E104K	25V 0.1U	1	
W703	ERJ6GEY0R00V	1/8W 0	1		C1604	ECJ2VB1E104K	25V 0.1U	1	
W704	ERJ6GEY0R00V	1/8W 0	1		C1605	ECJ2XC1H181J	16V 180P	1	
W705	ERJ6GEY0R00V	1/8W 0	1		C1606	ECJ2VB1H103K	50V 0.01U	1	
W706	ERJ3GEY0R00	1/10W 0	1		C1607	F2A1A681A539	10V 680U	1	
W707	ERJ3GEY0R00	1/10W 0	1		C1608	ECJ2VB1E104K	25V 0.1U	1	
W708	ERJ3GEY0R00	1/10W 0	1		C1701	EEUFM1E221	25V 220U	1	
W709	ERJ3GEY0R00	1/10W 0	1		C1702	ECJ1XB1C104K	16V 0.1U	1	
W711	ERJ3GEY0R00	1/10W 0	1		C1703	ECJ1XB1C104K	16V 0.1U	1	
W712	ERJ3GEY0R00	1/10W 0	1		C1704	ECJ1VB1H103K	50V 0.01U	1	
W713	ERJ3GEY0R00	1/10W 0	1		C1705	ECJ1XC1H121J	50V 120P	1	
W714	ERJ3GEY0R00	1/10W 0	1		C1706	ECJ1VB1H103K	50V 0.01U	1	
W715	ERJ3GEY0R00	1/10W 0	1		C1707	F2A0J681A550	6.3V 680U	1	
W716	ERJ3GEY0R00	1/10W 0	1		C1800	F2A1E4700048	25V 47U	1	
W717	ERJ3GEY0R00	1/10W 0	1						
W718	ERJ3GEY0R00	1/10W 0	1		D1140	B0EDKT000009	DIODE	1	
W719	ERJ3GEY0R00	1/10W 0	1		D1151	B0HAGM000006	DIODE	1	
W720	ERJ3GEY0R00	1/10W 0	1		D1152	MAZ4100NMF	DIODE	1	
W721	ERJ3GEY0R00	1/10W 0	1		D1155	MAZ73000BC	DIODE	1	
W722	ERJ3GEY0R00	1/10W 0	1		D1156	MA165TA5	DIODE	1	MA2C16500E
W723	ERJ3GEY0R00	1/10W 0	1		D1157	AP01C	DIODE	1	B0HADV000010
W724	ERJ3GEY0R00	1/10W 0	1		D1270	B0JBSG000010	DIODE	1	
W725	ERJ3GEY0R00	1/10W 0	1		D1400	B0JCPE000015	DIODE	1	
W726	ERJ3GEY0R00	1/10W 0	1		D1401	B0JCPD000021	DIODE	1	
W727	ERJ3GEY0R00	1/10W 0	1		D1601	B0JCPD000021	DIODE	1	
W728	ERJ3GEY0R00	1/10W 0	1		D1701	B0JCPE000015	DIODE	1	
W729	ERJ6GEY0R00V	1/8W 0	1		D1800	MA2J11100L	DIODE	1	
W730	ERJ3GEY0R00	1/10W 0	1						
W731	ERJ3GEY0R00	1/10W 0	1		F1101	K5D202BK0005	FUSE	1	⚠
X7501	H0D100500018	CRYSTAL OSCILLATOR	1		IC1150	C0DACZH00017	IC	1	
X7502	H0A327200108	CRYSTAL OSCILLATOR	1		IC1200	C0DAEMB00003	IC	1	
					IC1400	C0DAAJG00007	IC	1	
n	04	VEP01961A	1	(POWER SUPPLY P.C.B.)	IC1401	C0DBAKG00005	IC	1	
					IC1501	C0EBJ0000143	IC	1	
					IC1601	C0DBAKG00007	IC	1	
C1120	ECQU2A223MLC	0.022U	1	⚠	IC1701	C0DBAKG00005	IC	1	
C1121	ECQU2A683MLC	100V 0.068U	1	⚠					
C1122	F1B2G1020002	400V 1000P	1	⚠	IP1401	K5H3022A0013	IC PROTECTOR	1	⚠
C1123	F1B2G1020002	400V 1000P	1	⚠	IP1601	K5H3022A0013	IC PROTECTOR	1	⚠
C1125	F1B2G1020002	400V 1000P	1	⚠					
C1143	ECEC2GG680FZ	400V 68U	1		L1120	G0B233D00001	COIL	1	⚠
C1150	EEUFM1V680B	35V 68U	1		L1121	G0B233D00001	COIL	1	⚠
C1151	F1B3D102A011	2V 1000P	1		L1270	G0A100H00025	COIL 10UH	1	
C1152	ECJ2XC1H331J	16V 330P	1		L1400	G0A100HA0023	COIL 10UH	1	
C1153	ECUM1H222KBN	50V 2200P	1		L1401	G0A330ZA0041	COIL 33UH	1	
C1154	ECJ2XB1H102K	50V 1000P	1	ECJ2VB1H102K	L1402	G0A150ZA0041	COIL 15UH	1	
C1200	ECJ2VB1E104K	25V 0.1U	1		L1503	G0A100HA0023	COIL 10UH	1	
C1201	ECJ2VB1E473K	25V 0.047U	1		L1601	G0A150ZA0041	COIL 15UH	1	
C1270	F2A1C182A621	16V 1800U	1		L1701	G0A220ZA0041	COIL 22UH	1	
C1271	F2A1C182A621	16V 1800U	1						
C1272	F2A1C102A625	16V 1000U	1		LB1400	J0JHC0000048	FILTER	1	
C1273	EEUFM1C121	25V 120U	1		LB1600	J0JHC0000048	FILTER	1	
C1274	ECJ2VB1E104K	25V 0.1U	1		LB1700	J0JHC0000048	FILTER	1	
C1400	EEUFM1E221	25V 220U	1						
C1401	ECJ2XF1C105Z	16V 1U	1		P1101	K2AA2H000007	AC INLET	1	⚠
C1402	ECJ2VB1H103K	50V 0.01U	1		P1102	K1KB23A00004	CONNECTOR(23P)	1	
C1403	ECUV1H391JCG	50V 390P	1	ECJ2VC1H391J	P1103	K1KA04AA0190	CONNECTOR(4P)	1	
C1404	ECJ2VB1H472K	50V 4700P	1						
C1405	ECJ2XB1H102K	50V 1000P	1	ECJ2VB1H102K	Q1200	B3PBA0000237	TRANSISTOR	1	⚠
C1406	F2A0J681A550	6.3V 680U	1		Q1270	B1DHED000008	TRANSISTOR	1	
C1407	EEUFM1E221	25V 220U	1		Q1400	B1DHDD000022	TRANSISTOR	1	
C1408	ECJ2VB1E104K	25V 0.1U	1		Q1600	B1DHDD000022	TRANSISTOR	1	
C1409	ECJ2VB1E104K	25V 0.1U	1		Q1700	B1DDCC000009	TRANSISTOR	1	
C1410	ECJ2VB1H223K	50V 0.023U	1						
C1411	ECJ2XC1H181J	16V 180P	1		QR1301	UNR221300L	TRANSISTOR	1	
C1412	ECJ2VB1H103K	50V 0.01U	1		QR1302	UNR221300L	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
QR1303	UNR221300L	TRANSISTOR	1	
QR1304	UNR221300L	TRANSISTOR	1	
QR1800	UN2113	TRANSISTOR	1	UNR2113
QR1801	UNR221300L	TRANSISTOR	1	
R1150	ERJ6GEYJ180	1/8W 18	1	
R1151	ERJ6GEYG682	1/8W 6.8K	1	
R1152	ERJ6GEYJ103V	1/8W 10K	1	
R1153	ERJ6GEYJ180	1/8W 18	1	
R1154	ERJ6GEYG912V	1/8W 9.1K	1	
R1155	ERJ6GEYG471	1/8W 470	1	
R1156	ERJ6ENF1602	1/8W 82K	1	
R1157	ERJ6GEYG511	1/8W 510	1	
R1158	ERX2SJR22P	2W 0.22	1	
R1200	ERJ6GEYG122	1/8W 1.2K	1	
R1201	ERJ6ENF8201	1/8W 12K	1	
R1205	ERJ6GEYJ224	1/8W 220K	1	
R1206	ERJ6GEYG242V	1/8W 2.4K	1	
R1207	ERJ6GEYJ103V	1/8W 10K	1	
R1208	ERJ6GEYJ222V	1/8W 2.2K	1	
R1209	ERJ6GEYJ102V	1/8W 1K	1	
R1210	ERJ6GEYJ102V	1/8W 1K	1	
R1270	ERJ6GEYJ472V	1/8W 4.7K	1	
R1271	ERJ6GEYJ472V	1/8W 4.7K	1	
R1311	ERJ6GEYJ472V	1/8W 4.7K	1	
R1401	ERJ6GEYJ104V	1/8W 100K	1	
R1402	ERJ6RBD821	1/10W 820	1	
R1404	ERJ6RBD102V	1/10W 1K	1	
R1405	ERJ6GEYJ513V	1/8W 51K	1	
R1406	D1BFR0270001	1/2W 0.027	1	
R1407	ERJ6RBD272	1/10W 2.7K	1	
R1409	ERJ6RBD472V	1/10W 4.7K	1	
R1410	ERJ6RBD151	1/10W 150	1	
R1411	ERJ6RBD123V	1/10W 12K	1	
R1518	ERJ6GEYJ103V	1/8W 10K	1	
R1601	D1BFR0150001	1/2W 0.015	1	
R1602	ERJ6GEYJ513V	1/8W 51K	1	
R1603	ERJ6RBD242	1/10W 2.4K	1	
R1604	ERJ6RBD153	1/10W 15K	1	
R1605	ERJ6RBD272	1/10W 2.7K	1	
R1701	ERJL14KJ47MU	47	1	D1BFR047A010
R1702	ERJ3GEYJ333	1/10W 33K	1	
R1703	ERJ3GEY0R00	1/10W 0	1	
R1704	ERJ3RBD103	1/16W 10K	1	
R1705	ERJ3RBD472	1/16W 4.7K	1	
R1800	ERJ6GEYJ471	1/8W 470	1	
R1801	ERJ6GEYJ104V	1/8W 100K	1	
R1802	ERJ6GEYJ472V	1/8W 4.7K	1	
R1803	ERJ6GEYJ103V	1/8W 10K	1	
T1150	ETS29AZ2G6AC	TRANSFORMER	1	⚠
VA1110	ERZVA5V471	SURGE ABSORBER	1	⚠
ZA1103	EYF52BCY	FUSE HOLDER	1	
ZA1104	EYF52BCY	FUSE HOLDER	1	
n	05	VEP07A77C	1	(TUNER P.C.B.)
C7809	ECJ1VB1H103K	50V 0.01U	1	
C7813	F2A0J470A599	6.3V 47U	1	
C7814	F2A1H2200032	50V 22U	1	
C7817	F2A0J470A599	6.3V 47U	1	
C7818	ECJ1VC1H330J	50V 33P	1	
C7819	ECJ1VC1H330J	50V 33P	1	
C7820	ECJ1XB1C104K	16V 0.1U	1	
C7821	ECJ1VB1H103K	50V 0.01U	1	
C7822	ECJ1VB1H103K	50V 0.01U	1	
C7824	F2A0J470A599	6.3V 47U	1	
C7825	ECJ1XC1H101J	50V 100P	1	
C7828	ECJ1VB1H103K	50V 0.01U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
D7802	MA4300N-M	DIODE	1	MAZ4300NM
K7808	ERJ3GEY0R00	1/10W 0	1	
K7810	ERJ3GEY0R00	1/10W 0	1	
LB7802	J0JHC0000032	COIL	1	
LB7803	J0JHC0000032	COIL	1	
LB7804	J0JHC0000032	COIL	1	
PS7801	VJS3042F018W	CONNECTOR(18P)	1	K1KB18B00012
Q7802	2SB1218A	TRANSISTOR	1	
R7811	ERG2SJ471E	2W 470	1	
R7812	ERJ6GEYG681	1/8W 680	1	
R7815	ERJ3GEYJ471	1/10W 470	1	
R7816	ERJ3GEYJ471	1/10W 470	1	
R7817	ERG2SJ471E	2W 470	1	
R7818	ERJ3GEYJ221	1/10W 220	1	
R7820	D0GB102JA057	1/10W 1K	1	
R7844	ERJ6GEYG681	1/8W 680	1	
TU7801	ENGF7502GF	TV TUNERS	1	⚠
W501	ERJ3GEY0R00	1/10W 0	1	
W502	ERJ6GEY0R00V	1/8W 0	1	
W503	ERJ3GEY0R00	1/10W 0	1	
W504	ERJ3GEY0R00	1/10W 0	1	
W505	ERJ6GEY0R00V	1/8W 0	1	
W506	ERJ3GEY0R00	1/10W 0	1	
W507	ERJ3GEY0R00	1/10W 0	1	
W508	ERJ6GEY0R00V	1/8W 0	1	
W509	ERJ3GEY0R00	1/10W 0	1	
W510	ERJ3GEY0R00	1/10W 0	1	
W511	ERJ6GEY0R00V	1/8W 0	1	
W512	ERJ6GEY0R00V	1/8W 0	1	
W513	ERJ6GEY0R00V	1/8W 0	1	
W514	ERJ6GEY0R00V	1/8W 0	1	
W515	ERJ6GEY0R00V	1/8W 0	1	
W516	ERJ3GEY0R00	1/10W 0	1	
W517	ERJ3GEY0R00	1/10W 0	1	
W518	ERJ6GEY0R00V	1/8W 0	1	
W519	ERJ3GEY0R00	1/10W 0	1	
W520	ERJ3GEY0R00	1/10W 0	1	
W521	ERJ3GEY0R00	1/10W 0	1	
W522	ERJ6GEY0R00V	1/8W 0	1	
W523	ERJ3GEY0R00	1/10W 0	1	
W524	ERJ6GEY0R00V	1/8W 0	1	
W525	ERJ6GEY0R00V	1/8W 0	1	
W526	ERJ6GEY0R00V	1/8W 0	1	
W527	ERJ6GEY0R00V	1/8W 0	1	
W528	ERJ6GEY0R00V	1/8W 0	1	
W529	ERJ3GEY0R00	1/10W 0	1	
W530	ERJ6GEY0R00V	1/8W 0	1	
W531	ERJ3GEY0R00	1/10W 0	1	
W532	ERJ3GEY0R00	1/10W 0	1	
W533	ERJ3GEY0R00	1/10W 0	1	
W534	ERJ3GEY0R00	1/10W 0	1	
W535	ERJ3GEY0R00	1/10W 0	1	
W536	ERJ8GEY0R00V	1/4W 0	1	
W537	ERJ3GEY0R00	1/10W 0	1	
W538	ERJ6GEY0R00V	1/8W 0	1	
W539	ERJ6GEY0R00V	1/8W 0	1	
W540	ERJ3GEY0R00	1/10W 0	1	
W541	ERJ3GEY0R00	1/10W 0	1	
W542	ERJ6GEY0R00V	1/8W 0	1	
W543	ERJ6GEY0R00V	1/8W 0	1	
W544	ERJ6GEY0R00V	1/8W 0	1	
W545	ERJ6GEY0R00V	1/8W 0	1	
W546	ERJ6GEY0R00V	1/8W 0	1	
W547	ERJ3GEY0R00	1/10W 0	1	
W548	ERJ3GEY0R00	1/10W 0	1	
W549	ERJ3GEY0R00	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
W550	ERJ8GEY0R00V	1/4W 0	1	
n	06	VEP73121E	1	(SD CARD P.C.B.)
C6801	ECJ1VB1H103K	50V 0.01U	1	
C6802	ECJ2FB0J106K	6.3V 10U	1	
C6803	ECJ2FB0J106K	6.3V 10U	1	
FL6801	F1H0J1050025	FILTER	1	
LB6801	J0JHC0000032	COIL	1	
LB6802	J0JHC0000045	COIL	1	
P6802	K1KB14A00073	CONNECTOR(14P)	1	
P6803	K1NA09E00027	CONNECTOR(9P)	1	
R6801	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R6802	ERJ3GEYJ220	1/10W 22	1	
R6803	ERJ3GEYJ220	1/10W 22	1	
R6804	ERJ3GEYJ223	1/10W 22K	1	
R6805	D0GB123JA057	1/10W 12K	1	
R6807	ERJ3GEYJ223	1/10W 22K	1	
RX6801	EXB28V220J	RESISTOR-RESISTOR	1	
RX6802	D1H81234A024	RESISTOR-RESISTOR	1	
n	07	VEP70115A	1	(FRONT(L)P.C.B.)
P7001	K1KA03AA0301	CONNECTOR(3P)	1	
S7001	EVQPC105K	SWITCH,POWER	1	
n	10	VEP73123A	1	(DV JACK P.C.B.)
P37001	K1KA06B00181	CONNECTOR(6P)	1	
P37002	K2HZ104B0012	CONNECTOR(104P)	1	
n	11	VEP70116A	1	(LED P.C.B.)
C7101	ECJ1VB1H103K	50V 0.01U	1	
C7102	ECJ1VB1H103K	50V 0.01U	1	
D7101	B3ABA0000595	DIODE	1	
D7102	B3ACA0000265	DIODE	1	
D7104	B3AEA0000060	DIODE	1	
D7107	B3AEA0000049	DIODE	1	
P7101	VJS3042F006W	CONNECTOR(6P)	1	K1KB06B00024
Q7101	2SD0601ARL	TRANSISTOR	1	
Q7102	2SD0601ARL	TRANSISTOR	1	
Q7103	2SD0601ARL	TRANSISTOR	1	
Q7104	2SD0601ARL	TRANSISTOR	1	
R7101	D0GB103JA057	1/10W 10K	1	
R7102	D0GB103JA057	1/10W 10K	1	
R7103	ERJ6GEYJ201V	1/8W 200	1	
R7104	ERJ6GEYJ201V	1/8W 200	1	
R7105	ERJ6GEYJ201V	1/8W 200	1	
R7106	ERJ6GEYJ151V	1/8W 150	1	
R7108	D0GB473JA057	1/10W 47K	1	
R7110	D0GB473JA057	1/10W 47K	1	
R7112	D0GB473JA057	1/10W 47K	1	
R7114	D0GB473JA057	1/10W 47K	1	
n	12	VEP07A51A	1	(NICAM DECORDER P.C.B.)
C7301	ECJ1VF1C104Z	16V 0.1U	1	
C7302	ERJ3GEY0R00	1/10W 0	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C7303	ECEA0JKS101	6.3V 100U	1	
C7305	ECEA0JKS101	6.3V 100U	1	
C7306	ECJ1VF1H103Z	50V 0.01U	1	
C7307	ECJ1VC1H100C	50V 10P	1	
C7308	ECJ1VC1H100C	50V 10P	1	
C7309	ECJ1XC1H101J	50V 100P	1	
C7310	ECJ1XC1H101J	50V 100P	1	
C7311	ECJ1XC1H101J	50V 100P	1	
C7312	ECEA1CKS100	16V 10U	1	
C7313	ECEA1CKS100	16V 10U	1	
C7314	ECJ1VF1C104Z	16V 0.1U	1	
C7317	ECEA1CKA470	16V 47U	1	
C7318	ECEA1CKS100	16V 10U	1	
C7323	ECJ1XC1H102J	50V 1000P	1	
C7324	ECJ1VF1C104Z	16V 0.1U	1	
C7329	ERJ3GEY0R00	1/10W 0	1	
C7330	ERJ3GEYJ822	1/10W 8.2K	1	
C7332	ECJ1VF1C104Z	16V 0.1U	1	
C7333	ECJ1XB1C104K	16V 0.1U	1	
C7334	ECEA1HKS2R2	50V 2.2U	1	
C7335	ECJ1VF1C104Z	16V 0.1U	1	
IC7301	C1AB00002225	IC	1	
IC7302	PST7043-T	IC	1	C0EAH0000051
K7301	ERJ3GEY0R00	1/10W 0	1	
K7302	ERJ3GEY0R00	1/10W 0	1	
K7303	ERJ3GEY0R00	1/10W 0	1	
K7305	ERJ3GEY0R00	1/10W 0	1	
L7303	G0C1R0JA0019	COIL 1UH	1	
LB7301	J0JCC0000124	COIL	1	
LB7302	J0JCC0000124	COIL	1	
LB7303	J0JCC0000080	COIL	1	
PK7301	VJR0777B007W	CONNECTOR(7P)	1	K1MM07B00002
PK7302	VJR0777B006W	CONNECTOR(6P)	1	K1MM06B00002
R7301	ERJ3GEY0R00	1/10W 0	1	
R7304	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7307	ERJ3GEY0R00	1/10W 0	1	
R7309	D0GB103JA057	1/10W 10K	1	
R7311	ERJ3GEYJ221	1/10W 220	1	
R7312	ERJ3RBD221	1/10W 220	1	
R7313	ERJ3RBD221	1/10W 220	1	
R7314	ERJ3GEY0R00	1/10W 0	1	
R7315	ERJ3GEY0R00	1/10W 0	1	
R7317	ERJ3GEY0R00	1/10W 0	1	
R7319	ERJ3GEY0R00	1/10W 0	1	
R7322	ERJ3GEY0R00	1/10W 0	1	
R7324	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
R7325	ERJ3GEYJ101	1/10W 100	1	D0GB101JA002
W6	ERJ3GEY0R00	1/10W 0	1	
W7	ERJ3GEY0R00	1/10W 0	1	
X7301	H0D245500016	CRYSTAL OSCILLATOR	1	